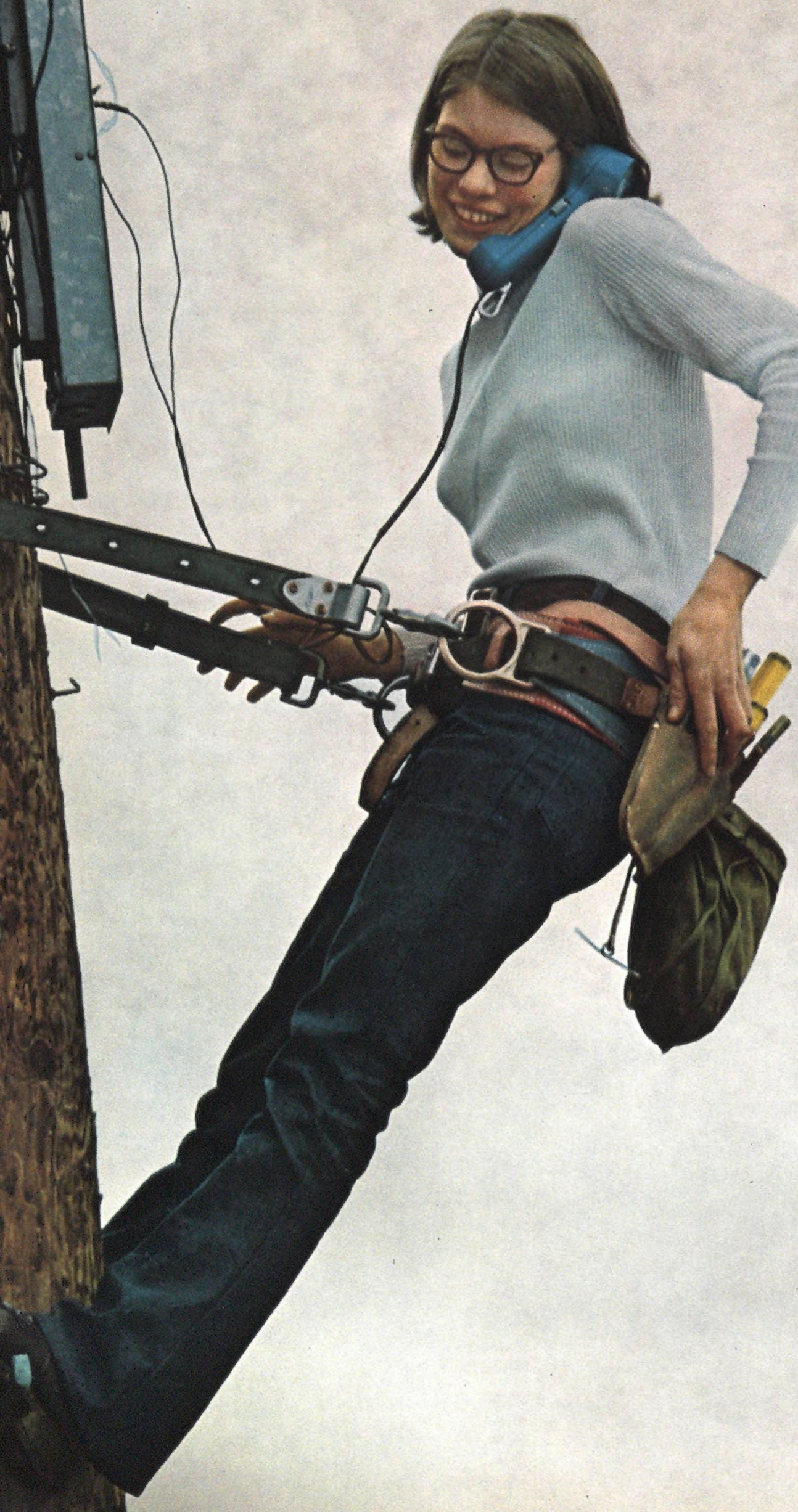
July 1972

Smithsonian

Merry-go-rounds (page 40): hand-carved steed above exemplifies an American art

The phone company wants more installers like Alana MacFarlane.



Alana MacFarlane is a 20-year-old from San Rafael, California. She's one of our first women telephone installers. She won't be the last.

We also have several hundred male telephone operators. And a policy that there are no all-male or all-female jobs at the phone company.

We want the men and women of the telephone company to do what they want to do, and do best.

For example, Alana likes working outdoors. "I don't go for office routine," she said. "But as an installer, I get plenty of variety and a chance to move around."

Some people like to work with their hands, or, like Alana, get a kick out of working 20 feet up in the air.

Others like to drive trucks. Some we're helping to develop into good managers.

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July 1972

Smithsonian

Volume 3, Number 4

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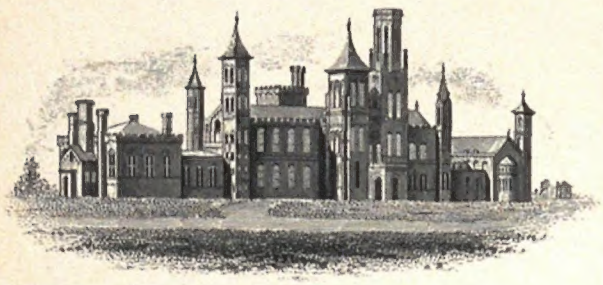
Secretary Ripley's comments

The view from the castle



Vandalism in museums and at archaeological sites is not only a crime in the legal sense—it is a crime against civilization

Museums in this country are reeling under the vastly increased expense of maintenance, utilities, guard service and a variety of personnel costs. This, added to the increased use of museums by all ages of people—from school classes to planned visits of senior citizens—threatens to overwhelm them.

The mere presence of huge crowds thronging the halls, however much we welcome them, must set up currents of air that have a physical effect on exposed paintings, tapestries and objects—ever so slightly eroding them in the way of riverbanks by the current. And then there is the more obvious kind of wear, such as that of St. Peter's bronze toe in Rome—kissed by generations of pilgrims until it is more than polished, it is losing its outline. So objects gradually become obliterated with time.

Now we have a resurgence of an old nuisance, vandalism. The recent mad attack on Michelangelo's *Pietà* in St. Peter's is only an extreme example of the acts of vandalism that are occurring in museums everywhere today. In our own Freer Gallery of Art in Washington, the single act of a child's making a chalk mark on an 11th-century silk scroll painting can take up to six months to repair, so fragile is the material. Not long ago a vandal broke an exhibit window in our Museum of Natural History under the mistaken impression that the stuffed snake inside was his enemy and that he, like St. Patrick, was about to perform a service for humanity.

A greater kind of vandalism is theft. Recently there was a notable theft of paintings from the Worcester Art Museum in Massachusetts. Last fall there was the incredible theft in Belgium of a Vermeer, stolen by one Mario Roymans in the hope of raising ransom money for Bangladesh relief, which was later recovered in a badly damaged state from under the thief's mattress (SMITHSONIAN, March 1972). During five months of 1971, Interpol listed at least 12 major thefts from museums or public monuments in Spain, Italy, France, Austria, Switzerland, Egypt, Japan and the United States—ranging from a "priceless" Jan van Kessel stolen from the Prado in Madrid to an 1847 Colt revolver, worth $25,000, taken from the Connecticut State Museum in Hartford.

The sadness of this is that stealing works of art or of historical interest, modern ones no less than Old Masters, is not only a felony but a crime against civilization when, as often happens, they are damaged—perhaps irretrievably. This is cultural vandalism.

In this crowded world, torn by alienation and dissension, where we seem somehow to have lost contact with the natural environment, we find ourselves able only to pollute what we touch. What new sense of ethics will restore us? What do museums have to offer that can help?

At the very least, museums should cooperate to inhibit the senseless looting of art treasures from graves and archaeological sites in the less-developed countries. Furthermore, museums should play no part in the traffic in stolen treasures. This is merely museum morality. But beyond this, museums must strive to create a point of contact between citizens and their history, which will re-create a sense of pride in human accomplishment and reaffirm human dignity.

S. Dillon Ripley

Do 18th century things have a place in our century?

From the 18th and 19th centuries come the warm and beautiful designs in furnishings, tools and accessories that are working a new revolution in the quality of life of twentieth century man. Read here how the Early American Society can help you bring the beauty of early America into your family's life.

The Early American Society Story

Millions of present-day Americans are stimulated by the warmth and beauty of young America. Some wish to re-create in their homes a total atmosphere that recalls Colonial days. Others practice the skills that created the objects and art of the period. Still others wish to absorb the background—the "social history" of the people of that day through understanding how they lived, loved, and worked.

The Early American Society, founded in 1969, is dedicated to bringing the total story of American social history of the period, 1700-1850, to those who wish to use it in their lives. We accomplish this through several programs including publishing EARLY AMERICAN LIFE six times each year. Our magazine features articles, lavishly illustrated, on arts, crafts, antiques, restoration, travel to historic sites, and all related subjects of interest to members.

To foster reading of books on these subjects, the Early American Society Book Program offers the latest books of leading publishers at discounts up to 25%. Heirloom quality reproductions of outstanding early furniture items are commissioned by the Society and made available only to members in limited editions. Group travel and historical assemblies offer members the opportunity to enrich themselves under the guidance of qualified professionals.

If your special early American interest includes antiques, restoration, arts, crafts, social history, or simply the warm style of the period, 1700-1850, your membership in the Early American Society may become one of your most valuable possessions. We are certain enough of this to offer a no-risk membership. Just mail the application below or the accompanying card. You pay only after your mind is made up that you are satisfied with your membership. Annual dues are $6.00.

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Please enroll me as a member in the Early American Society and bill my annual dues of $6.00 after I have received my first issue of EARLY AMERICAN LIFE. I understand that if the first issue does not live up to my expectations I may cancel without further obligation.

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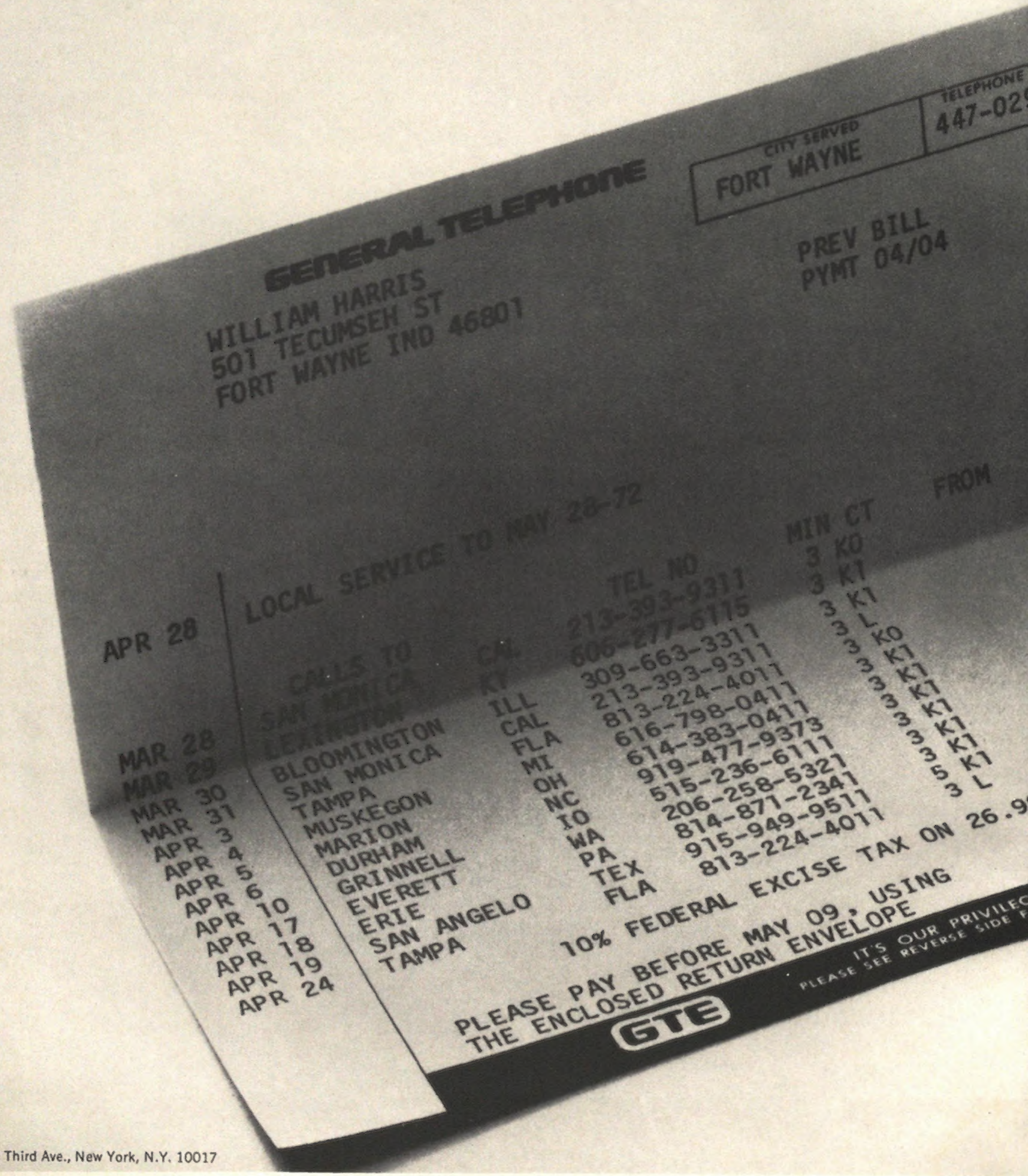
Your telephone bill



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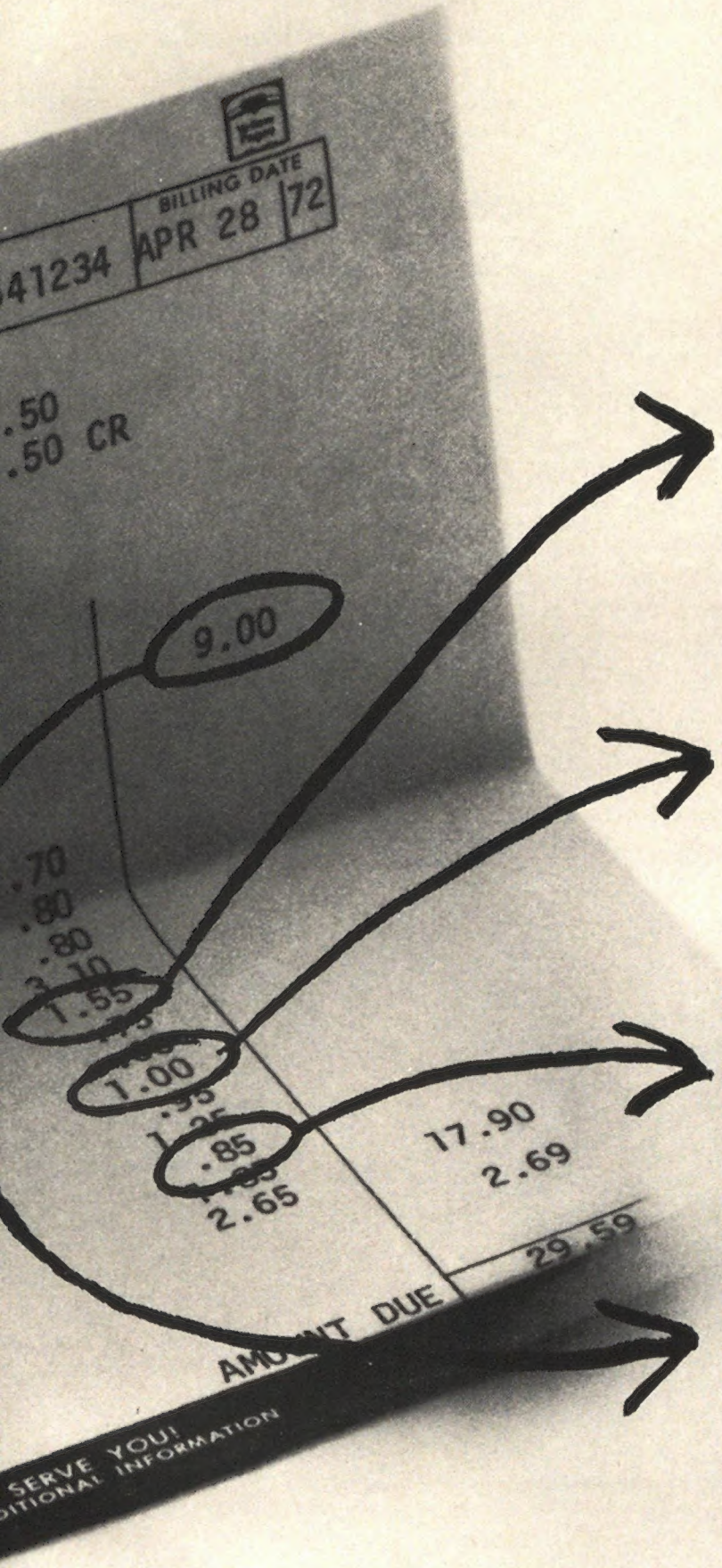
could be too high.



The Normal Procedure: The phone bill comes in the mail; you look at it, write a check, moan and groan a lot, and forget about it until next month, when you repeat The Normal Procedure.

Our Recommendation: Consider the possibility that your phone bill may be too high because you haven't been taking advantage of the following possibilities:

1. Dial long distance out-of-state calls yourself.

If you're willing to talk to anyone who picks up the phone at the other end, it's cheaper to dial the number yourself and call station-to-station than to have our operator do it for you.

Even if you want to talk to somebody in particular, the odds are very much in your favor that you'll get him by dialing station-to-station yourself. And if you don't get him the first time, a call-back (sometimes two) is still cheaper than person-to-person.

2. Place out-of-state long distance calls at bargain rate times.

The right times to call are after 5 p.m., when you get our low evening rate; after 11 p.m., when you get our even lower dial-it-yourself night rate; on Saturday and Sunday, when you get our low weekend rate, and on certain holidays.

In most states we also offer similar discounts on long distance calls. We suggest that you check your phone book for rates.

3. Report long distance wrong numbers.

When you dial long distance and get a wrong number, apologize to the nice people at the other end, hang up, dial "0" right away and tell our operator all about it. We'll see to it that you get a credit for the call.

Whatever you do, don't give up, don't mutter bad words to yourself, and don't go away mad.

4. Call us when you go on vacation.

We have a special service for you if you're going to be away for more than one month. Just call our business office and we'll unhook your line temporarily at our central office, thereby saving you as much as 50% on your local service charge.

These suggestions are not presented altogether altruistically; very often, by helping you save money, we save some money ourselves. We trust that won't keep you from following Our Recommendation.

We'd love to hear someone complain that their phone bill is too low.

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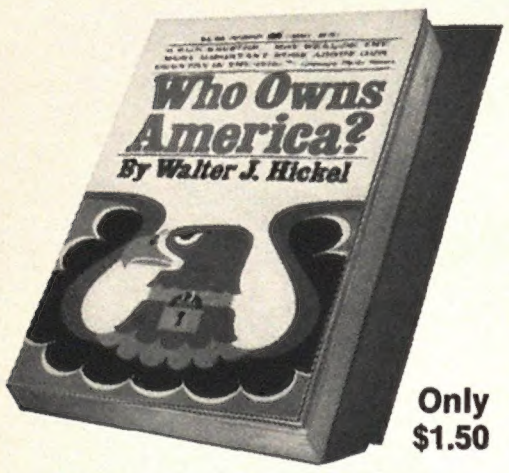

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Walter J. Hickel is the man who hated the SST, loved Earth Day, stopped the Everglades Airport, ended the Santa Barbara oil drilling, sued polluting corporations, returned the sacred Blue Lake lands to the Taos Pueblo, saved the baby seals and got himself fired by President Nixon!

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Letters to the Editor

Forest fires

Dear Sir: In reference to Robert Claiborne's timely and interesting article in the May issue on the use of fire and forest management, I do not wish to minimize Herbert L. Stoddard's pioneer work in the use of fire in bobwhite quail management. But it should be pointed out that Professor Herman Haupt Chapman of the Yale School of Forestry was the pioneer in the use of prescribed burning in the management of Southern pines . . . and, thus, in application in other forest regions and types.

Chapman's greatest problem at the time was the U.S. Forest Service. This was understandable, since the service was in an almost life-and-death struggle to change the age-old practice of indiscriminate forest burning. But the professor was a stubborn man and, finally, made his point. In fact, a prescribed burn was often called a "Chapman burn" in the South. His students (I was one of them) spread throughout the South carrying the prescribed-burn gospel, and one of his many monuments is the millions of acres of Southern pine timber and pulpwood reproduced and brought to maturity, largely through the use of prescribed burning.

Edgar P. Wyman
North Sandwich
New Hampshire

Paintings of the old West

Dear Sir: Your May cover painting of White Cloud reminded me of a question about Indian names that has long puzzled me. Do Indians really think of themselves as "White Cloud," "Sitting Bull" and "Running Fox," or do they, like us, just accept their names without thinking of the meaning of the words? I, for example, am the "Free One," but none of my friends calls me anything but "Frances." Conceivably, our names have moved much farther from their original meanings than have the Indian names. Still, that doesn't necessarily mean that Indians intend for their names to carry the meanings of the words.

Frances French
Baltimore, Maryland

A good source of information is an Indian. Hyemeyohsts Storm, the widely known author who does not translate his first name, says in a new book, Seven Arrows, *that "Names always had symbolic meaning among the People, and were the Reflections of the People's individual Medicines." Day Woman, for example, means "Woman of the Sun, or Truth." And throughout the book he refers to other characters as Charging Eagle, Night Bear, Dancing Water and Red Star.* Ed.

Dear Sir: George Catlin's *White Cloud* has a remarkable resemblance to television actor Leonard Nimoy.

Richard Farrar
Westerville, Ohio

Nimoy and White Cloud: look-alikes?

Dear Sir: I find it incomprehensible that Frank Getlein should cite James Fenimore Cooper in commenting on your display of Western art. Cooper never went to the prairies. Although he did write one minor novel, *The Prairie,* his characters, such as Natty Bumppo, were simply warmed over from his tales of the Eastern woods and arbitrarily placed in the West.

Ole Edvartsen
Salt Lake City, Utah

Teesside

Dear Sir: I was impressed by the efforts of the English ladies to clean up the en-

Cross-pollination helps grow ideas.

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Now, it would make a great story if we could say that two of our inventors locked themselves in ivory towers until one magical day when they walked out with the finished product. But that isn't the way it happened.

What happened was that 3M had been exploring non-woven fiber technology. One product that resulted was "Sasheen" brand decorative ribbon. And then a 3M scientist who had worked on that product got to wondering what would happen if a tough abrasive were somehow incorporated in a non-woven material. After many experiments, and many failures, a team produced "Scotch-Brite" brand scouring pads.

Later, someone else at 3M who was familiar with the non-woven fiber technology that was being explored got the idea that this could offer a route to a naturally breathable surgical tape. After many experiments, this idea resulted in "Micropore" brand breathable surgical tape. A little more interchange led to "Scotch" brand hair set tape.

This may not seem like a logical way of developing products. But that's what makes cross-pollination so special; the fact that it cannot be programmed.

It's not as simple as saying, "Hey, gang, let's cross-pollinate!" You don't get cross-pollination when everyone is hemmed in by organization charts and little boxes. Because a box can be just a rectangle that goes around someone's name. But it can also be a fence.

You get a free interchange of information when people know they are respected as individuals, and nobody is trying to keep them in one area or out of another.

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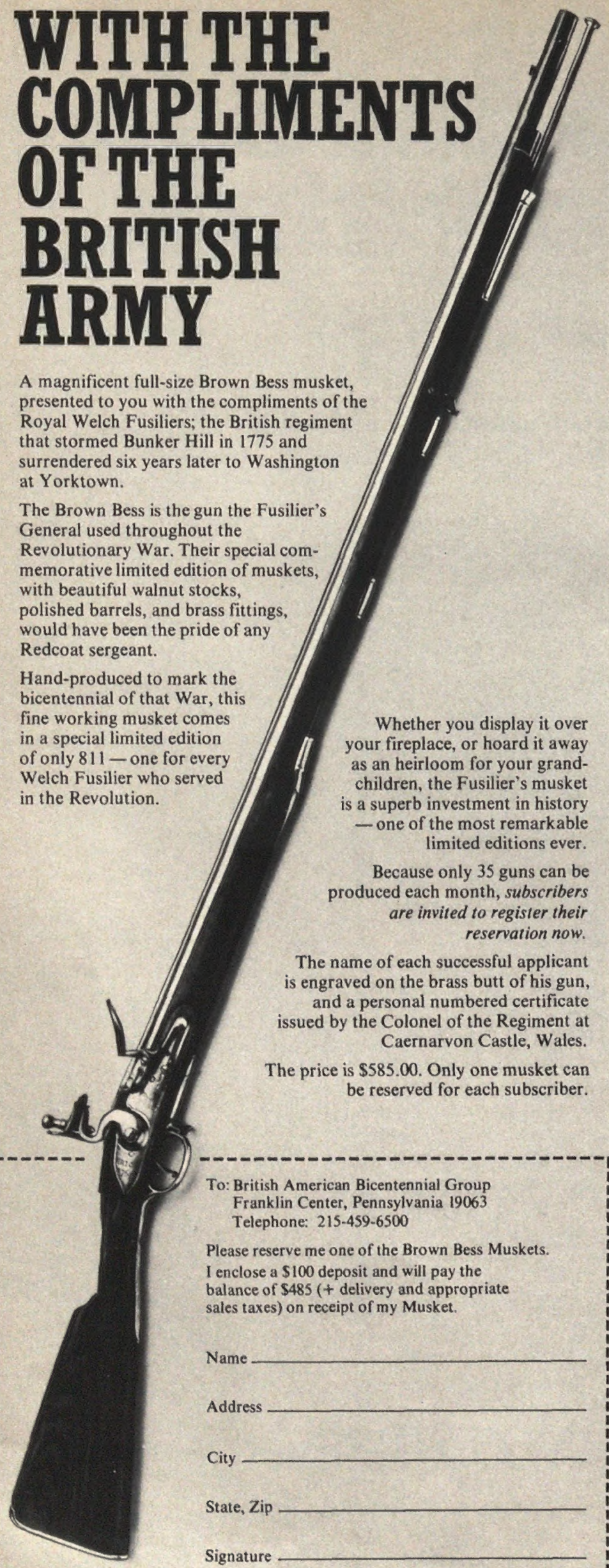

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vironment in Teesside, as described in Donald Gould's article. But I was distressed to note that one of the lady organizers was the mother of ten children, another of nine. The third had only two. I searched futilely in the article for any comment on this fact. One suspects they have not heard of "People Pollution." If not, it has got to be a factor in the deterioration of not only their area but wherever the human race sets itself down —even on Mt. McKinley, as you pointed out in a separate article in the same issue.
Pat Munroe
Washington, D.C.
Our comment on the third lady of the trio was: "She (perhaps because she belongs to a somewhat more enlightened generation) has only two children." Ed.

Chemical steps leading to life

Dear Sir: I would like to correct a few dates in your otherwise interesting article on the origin of life: In your photographs of fossils, the first is from the approximately 900-million-year-old Bitter Springs Formation of Central Australia; the second and third fossil pictures are from the 1.9-million-year-old Gunflint Iron Formation of southern Canada. I am sure Professor Elso Sterrenberg Barghoorn, who has done much work in this field, will agree with me.
John H. Oehler
Department of Geology
University of California
Los Angeles, California
Professor Barghoorn, who furnished the pictures, agrees but prefers to round off the dates to one billion years for the first and two billion for the other two. Ed.

Ballooning

Dear Sir: In your article on the splendid Smithsonian balloon exhibition, it was not the brothers Montgolfier who made the first manned ascension, but the Marquis d'Arlandes and Pilâtre de Rozier.
Christine K. Stockwell
Daly City, California

Short-lived phenomena

Dear Sir: I enjoy your new feature on short-lived phenomena, and I would like to point out a puzzling phenomenon that I have observed. About two years ago, the squirrels in a Sacramento park began re-

This extraordinary book is "an inspiring experience."

– BROOKS ATKINSON

ONLY ONE EARTH

The Care and Maintenance of a Small Planet

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ONE of the world's most influential writers and a world-renowned scientist examine the problems of our human environment from a global perspective and in their totality. This unofficial report, the first of its kind ever undertaken, was commissioned by the Secretary-General of the United Nations Conference on the Human Environment, held in Stockholm. Written in layman's language, it was prepared with the assistance of a 152-member committee of corresponding consultants in 58 countries.

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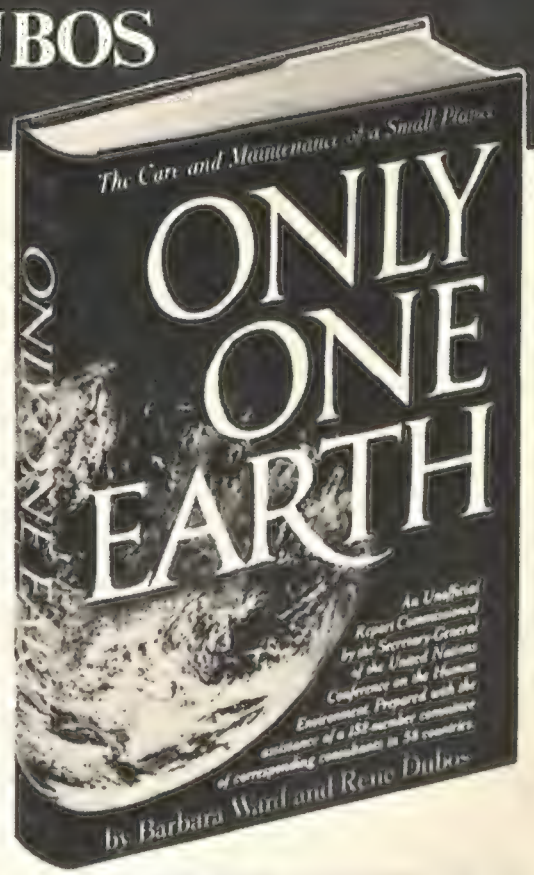
"And in the third place, it is exhilarating to realize that a department of the United Nations can perform its duties with the faith and good will of the original charter. The idea of a community of nations is still valid. In the area of the human environment Miss Ward and Mr. Dubos demonstrate the dignity and worth of the human person." – in *The Book-of-the-Month Club News*



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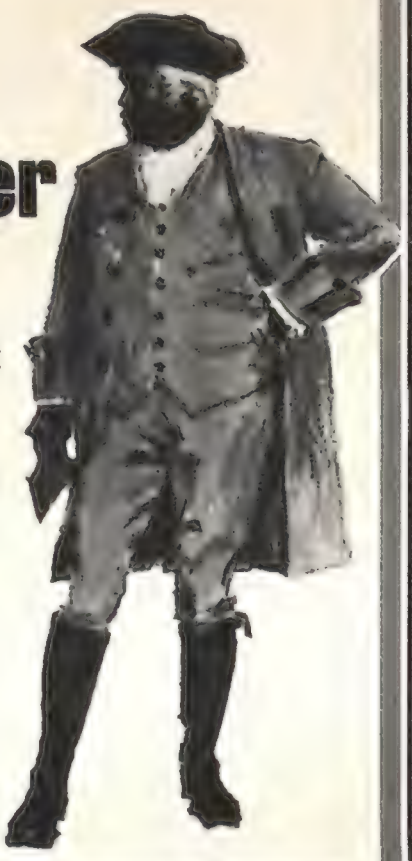

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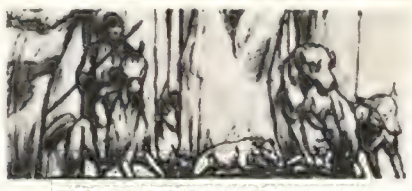

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fusing to eat salted peanuts, although they seemed as anxious as ever to be fed.

I offered them almonds, cashews and corn chips with no better luck. Out of all the squirrels, I might find one that still liked peanuts; but usually I ate them all myself. However, I have checked on this phenomenon recently, and find that the squirrels are eating nuts again. I may go broke trying to keep them supplied with peanuts.

Charles L. Anderson
Sacramento, California

Dear Sir: You used the word "blimp" and "dirigible" interchangeably in your description of proposed lighter-than-air cargo transports. Is not a blimp, by definition, a nonrigid airship still?

G. H. de la Vergne
St. Cloud, Florida

Technically, the answer is yes; but, in this item, we used blimp as a generic term for both rigid and nonrigid airships, a common usage. Ed.

Dear Sir: In your comments on harvester ants, you say: ". . . Here is one of the few cases where some children are taking care of their parents. . . ."

Can you identify some of the "few"—animal, bird, insect or reptile—in which the offspring is known to assist in the support of the parents?

Frederick C. Dyer
Chevy Chase, Maryland

In some animal species, the young never separate from their parents, but rather remain in the family, assisting in the care and feeding of the pregnant mother or newborn young. This is characteristic of the social insects (ants, termites, several bees and wasps) and, in the case of mammals, the Cape hunting dogs and wolves. Among birds, the offspring of the ani, water hen and kookaburra assist with at least the next generation. It also occurs, from time to time, among human animals. Ed.

James Smithson

Dear Sir: I thought you might be amused by our local newspaper's version of the origin of the Smithsonian Institution: "James Smithson, a wealthy English scientist, found the Smithsonian Institution in his will."

W. H. McAtee, Colonel, USAF (Retired)
Killeen, Texas

so·ci·e·ty (sə-sī′ə-te) n., pl. -ties. a. A group, or groups, of human beings sharing mutual interests and institutions, participating in a common culture distinguished by certain characteristics from other cultures. b. The sum total of social relationships among human beings.

How do you fit in?

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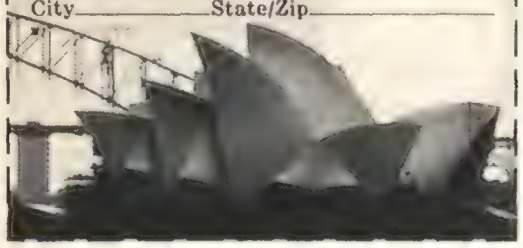

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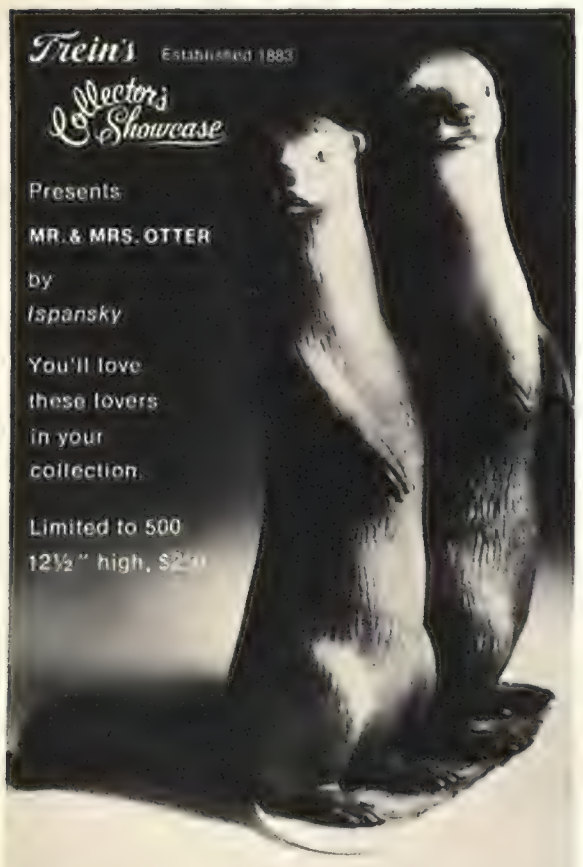

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Short-lived phenomena

Russian competition on two fronts, a remedy for the vampire's bite, virgin birth and a total solar eclipse

On Monday, July 10, a few Smithsonian Associates on a special tour, a lot of amateur photographers and a considerable number of astronomers, some of whom will convey any unusual findings to the Center for Short-lived Phenomena, will be in the vicinity of Antigonish, Nova Scotia. There for approximately 126 seconds the afternoon sky will go dark.

The first total solar eclipse in this hemisphere since March 7, 1970, its path of totality (the moon's full shadow) will start west of the Bering Strait and sweep across Alaska, southeastward through Canada, passing over Quebec, New Brunswick, Nova Scotia, and into the Atlantic. It will be moving at 2,000 miles per hour (and even faster at certain points), making it difficult for astronomers to race the shadow in airplanes, one of their tricks for prolonging the view of totality.

Partial phases will be detectable throughout the United States and as far south as the northern parts of South America. (Obviously, one should not stare at the sun in hopes of seeing the eclipse.) Those who miss it altogether for whatever reason should plan to be in Africa for the next total eclipse on June 30, 1973, or simply wait patiently in North America until February 26, 1979.

A case of progress

It is getting harder and harder these days to decide which invisible pollutants to worry yourself sick about and which to contemplate with unseeing calm.

Take carbon monoxide.

Approximately 97 percent of the carbon monoxide in the air of New York City is the result of exhaust gases of the internal-combustion engine. Imaginative city dwellers, watching their streets fill up with cars, might well feel that they are being forced to "take the pipe." But in fact, as far as this one pollutant is concerned, New Yorkers and perhaps all of us are better off now than we were 40 years ago.

Merril Eisenbud and Laurel R. Ehrlich of the New York University Medical Center report in *Science* that the average number of parts per million of CO in the air over New York City streets dropped from 32 in 1932 to 8 in 1967. (A similar pattern has been logged in Paris.) The reason they suggest is that coal and other "dirty" fuels for heating, cooking and electricity generation have been largely replaced by more combustible fuels such as oil and natural gas. The automotive contribution to CO levels apparently has not yet caught up with the bad old days.

The two scientists say that although CO is nearly ubiquitous as a contaminant, "it is very possible that the concentration of this gas in the air we breathe is now lower than at any time since Man first learned to use fire."

Combating bat bite

Judging from the vampire's recurrence in hundreds of motion pictures, generations of terrified Transylvanians haven't yet found a satisfactory solution to the bloodthirsty scourge that stalks their gloomy nights. Neither have generations of Latin Americans who are plagued with a three-inch vampire bat called *Desmodus rotundus* (see photograph), the cause of death, by rabies, of countless thousands of cattle and some humans.

The Agency for International Development has now internationally developed (with Mexico) what seems to be the desired remedy—a mixture of petroleum jelly and an anticoagulent drug which was spread on the backs of captured vampire bats. The one-ounce creatures have an extremely low tolerance for the anticoagulent (which seems fitting when you think about it). Released, the treated bats returned to their roosts where they engaged in the constant mutual grooming and licking that vampires enjoy, thus passing around the lethal dressing.

Each treated bat, it was found, perpetrated the death (from hematomas, internal hemorrhaging and circulatory failures) of some two or three dozen of its sociable roostmates. Survivors were too

The vampire bat may no longer haunt the cattlemen of Latin America.

weak to seek food and hence soon ceased to be survivors. In test groups of cattle, bat bites dropped by 96 to 100 percent in a two-week period.

Now then, Mr. Lugosi, before your supper how about a nice back rub?

The snail-fever campaign

Some potential new troops have been identified to join the widening war against snail fever.

Certain snails are temporary hosts for blood "flukes" that cause a dreaded tropical disease, schistosomiasis, now afflicting more than 200 million people. In September 1971, SMITHSONIAN reported on efforts to employ marsh flies as a biological control mechanism for snails.

Now the Smithsonian's Dr. Louis S. Kornicker and the U.S. Geological Survey's Dr. Israel Gregory Sohn report another natural enemy of snails. They found that a particular species of ostracode—part of an extremely large family of extremely small crustaceans—is an effective killer of the Brazilian snail species, which also causes the disease.

An additional strategy would be to attack not only the snails, but the flukes themselves when they are swimming from human to snail or snail to human. Mark Gibson and Kenneth S. Warren of Case Western Reserve University have discovered that a common water plant called bladderwort does just that. When a fluke (or for that matter other tiny creatures such as mosquito larvae) touches the hairs that grow on a bladderwort's bladder, it opens up, sucks in the creature and neatly digests it. Field tests are in order before such homely forces are arrayed against snail fever.

A compromised beetle

A female beetle with the melodic name of *Xyloboreus ferrugineus* has taken a giant evolutionary step toward total liberation. These beetles are capable, on a regular basis, of virgin birth.

The eggs of the female *ferrugineus* begin embryonic development with or without the addition of the male's sperm. Two entomologists from the University of Wisconsin, Benami Peleg and Dale Morris, have found the *deus ex machina* in this upsetting arrangement. Bacteria in the gravid female's gut migrate into her eggs where they become "intimately associated with the nuclei."

Liberation is not complete, however. Not only do the females have to submit to the attentions of these bacterial interlopers but, as the British magazine *New Scientist* notes, without the male's sperm the females can produce only males.

Russian ingenuity

Not to be outdone by American practitioners of Big Science, Soviet physicists have been experimenting with the development of a circular proton accelerator capable of an energy level of 1,000 billion electron volts (BeV). The United States' largest, at the National Accelerator Laboratory in Batavia, Illinois, is thought capable of 400 BeV (see SMITHSONIAN, December 1971), though that trouble-beset machine had achieved only 200 BeV as of June.

The United States may also be outdone by the Russians in the opposite direction: miniaturization. According to *Soviet Life* a carver from Uzhgorod, Nikolai Syadristy, has produced not only a chess figure that can be seen only when magnified a few thousand times through a microscope, but also (though hardly more practical) some horseshoes that are worn by a flea.

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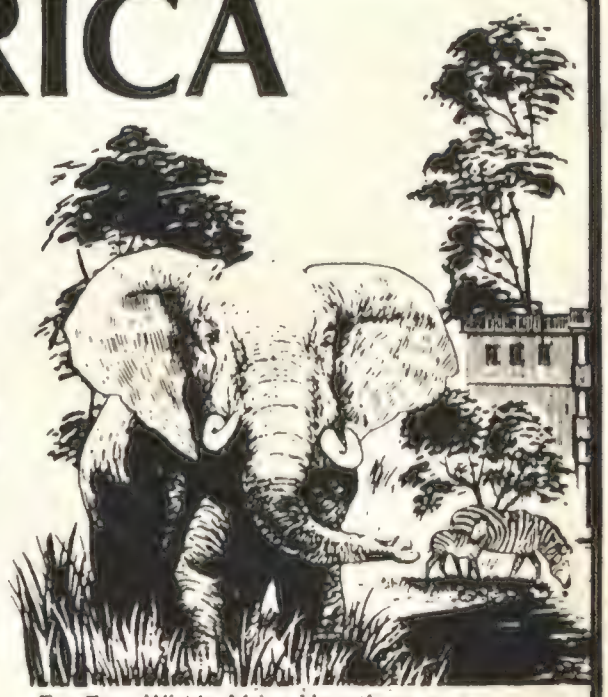

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The daily decibel diet for many Americans—from the scream of jets to the clatter of street noise—is proving to be far too rich.

Cartoons by Arnold Roth

By Theodore Berland

Bbrrreeeeeeeuuuuuuaaaaaaggghhhh! Clatter, rattle, whirrr . . . boom!

More than just a nuisance for some, noise can affect one's health in surprising ways. But we have the means of achieving some quiet

One thing you cannot say about the American way of life is that it is quiet. For most of us the daily decibel diet starts with the buzz of the alarm and includes some or all of the following: the grinding garbage disposal, the screech and roar of the subway or automobile traffic, the staccato of pneumatic drills, clattering typewriters, blaring TV commercials and the scream of jets overhead.

Even for those in rural areas, there is the distant rumble of modern farm machinery and the whine of chain saws. The quiet of remote woodlands is sometimes rent by the roar of snowmobiles; sightseers' helicopters even whir through the Grand Canyon; transistor radios vie with the sound of surf on most beaches (in contrast to the quiet scenes of bygone summers, 1885 to 1920, recorded on pages 32-39).

Indeed, many Americans have been reared in the belief that with noise comes power: Think for a minute about the ads one still sees for motorcycles and sports cars. Nor have home appliances become any quieter; Clifford A. Bragdon of the Georgia Institute of Technology points out that manufacturers have not sold quieter vacuum cleaners because housewives tend to think that a quiet vacuum cleaner is a less efficient one. Certain automobiles are sold partly on the basis of how quiet they are to drive, though little consideration is given to the noise they create outside the car. At any rate, for many people, noise is simply one of the prices one pays for progress.

Furthermore, noise is an intensely personal irritant. Psychological tests have shown that those who accept the widespread mystique that noise equals efficiency are less likely to suffer from it. The realization that noise (often defined as unwanted sound) may be not only unnecessary but harmful has been slow to spread. But researchers are now finding that noise can be physiologically damaging in an unexpected number of ways and, in response, local and state governments as well as the federal government are beginning to seek means of controlling noise. Also there are many steps that susceptible individuals can take to achieve a bit more peace, which will be described later in this article. Meanwhile, many people are hearing about noise pollution and are starting to realize that *that* is what has been bothering them all these years. In fact, it may have been bothering them for more years than they can recall.

The womb was once considered a quiet sanctum, apart from the world without. However, six months after conception, a fetus' hearing apparatus reaches normal development and the womb becomes a noisy place. A Swedish researcher has found that a fetus reacts (by changes in its heartbeat) to such noises as the honk of an automobile horn, the screech of train wheels on tracks, the whine of an electric can opener and the boom of a supersonic plane. Dr. Margaret Liley of New Zealand suggests that when a mother drinks champagne or beer, it sounds something like fireworks to the fetus inside her. Some animal experiments by Dr. Lester W. Sontag of Fels Research Institute in Ohio suggest that loud noises can cause small malformations in fetal nervous systems that can lead to problems later in life.

Theodore Berland's research for his book,
The Fight for Quiet, *led him to the presidency of Chicago's antinoise citizens' group.*

Noise pollution

A relatively quiet rock group is equivalent in decibels to a jet flying over at 1,000 feet.

That noise can affect hearing has been known for more than a century when doctors first described boilermaker's deafness, now called noise deafness. It is not congenital deafness, in which few or no sounds are heard; nor is it the kind of deafness which comes with aging, that hushes what you hear. Instead, noise deafness is the loss of the ability to hear specific frequencies of sound—usually those sounds involved in voice communication.

Snail-like in shape and filled with a liquid which closely resembles seawater, the cochlea, or inner ear, is located deep inside the protective temple bones of the skull. Sound waves transmitted by the eardrum and bones of the middle ear create waves in this liquid; these waves, in turn, cause tiny and sensitive hair cells to be stimulated to send electrical impulses to the hearing centers of the brain.

If the noise is loud enough, the ear can suffer the temporary inability to hear certain sounds because the hair cells are fatigued. If the cells are given a rest they can recover, but, if the noise is too prolonged or repeats itself too soon, the hair cells become permanently damaged. An ear thus noise-damaged is deaf to certain (usually higher) frequencies of sound, and neither hearing aid nor surgical operation can bring back the ability to hear those frequencies.

The noises most dangerous to hearing are those audibly the loudest, highest pitched, purest in tone and longest lasting, like sirens and jet engines. The first warning sign of noise deafness is a feeling of ear discomfort; if the noise is loud enough, there may be pain. Then may come the maddening ringing in the ears known medically as tinnitus.

Rock music, throbbing from giant amplifiers, is loud enough to make your ears ring. Those regularly exposed to it, musicians and enthusiasts alike, are among the 16 million or so Americans who now suffer from some degree of hearing loss caused by noise. Each year the number rises with the rising din. For instance, the ears of 13 million Americans who live near airports are now exposed regularly and dangerously to the shrill of jets passing closely overhead. Many millions more are exposed to the dangerously loud noises of subways. In spite of legal noise limits, many workers are subjected daily to levels that are thought to be harmful. Two Boston noise researchers, Dr. John D. Dougherty of Harvard University and Dr. Oliver L. Welsh of Boston University, have written, "What has passed unnoticed is that many noise levels encountered in the community exceed standards found injurious in industry."

A noise gauge

The intensity of sound—its pressure on the ears—is measured in units called decibels (dB). The decibel is not a linear unit like a centimeter but a logarithmic unit. Thus 10 dB is ten times the power of 1dB and 20 dB is 100 times the power of 1 dB.

Decibels do not take into account the shifts in frequency that also affect our perception of sound, so acousticians have developed, among other scales, the A scale (dBA) which gives less weight to low frequency sounds and, therefore, more closely correlates sound with human response. According to the Occupational Safety and Health Act, no worker should be subjected to 115 dBA for more than 15 minutes, or to 90 dBA for more than eight hours.

What follows are some common noise sources and their dBA ratings. Except where noted, the levels were measured at typical distances from the noise sources.

123 Armored personnel carrier
114 Rock band
110 Riveting machine
103 Jet flyover at 1,000 feet
98 Farm tractor
95 Power mower, subway at 35 miles per hour, compressor at 20 feet
90 Motorcycle at 25 feet, cockpit of light aircraft
88 Propeller aircraft flyover at 1,000 feet, food blender
84 Diesel truck going 40 miles pet hour at 50 feet
80 Garbage disposal
78 Clothes washer
77 Passenger car going 65 miles per hour at 25 feet
75 Dishwasher
70 Vacuum cleaner
64 Near freeway and auto traffic
60 Conversation, air-conditioner at 20 feet
55 Bedroom air-conditioner
20 Leaves rustling
0 Threshold of hearing

The Environmental Protection Agency, in a recent report, said that although, "the number exposed to potentially hazardous noise cannot be accurately assessed . . . a total of 40 million people might be reasonable." (An equal number, the report went on to say, occasionally suffer "an infringement on the ability to converse in the home," largely as a result of aircraft and construction noises.)

Nor is noise a threat only to hearing; it also affects the heart and blood vessels. Noise can directly alter the rhythm of the heartbeat; it also increases the level of cholesterol in the blood and raises blood pressure.

Even moderate noises cause small blood vessels in the body to constrict and impede blood flow. This vasoconstrictive reflex is an automatic response to the stress of noise and occurs even in sleep. Dr. Gerd Jansen of Essen, Germany, measured vasoconstriction in the fingers of sleeping subjects when he played recorded noises at only 55 decibels (dB), the level of nearby traffic (see box above). He found the effect even when the noise exposure lasted only a fraction of a second; but the blood vessels took minutes to reopen. He concluded that night sounds such as that of traffic, heard while we sleep, might further endanger ailing hearts and arteries.

The effects of noise are just the opposite on the blood vessels of the brain. It makes them dilate, or enlarge, perhaps thereby causing headaches. Even mild noises can make the pupils of the eye dilate; this is more than a laboratory curiosity. It can help explain why watchmakers, model makers, bookkeepers and others who do close work are so bothered by noise. Its effect on their eyes is to keep them constantly changing focus, causing eyestrain and, again, headache.

Other stressful effects of noise on the body include changes in secretion of acid by the stomach, changes in secretion of endocrine hormones, and changes in the functioning of the kidneys. In certain very rare forms of epilepsy, noise can trigger seizures. There are even noises below the threshold of hearing which can profoundly affect us. The French are developing exotic weapons that emit noise in the infrasonic range (those frequencies below hearing). The low, unheard, but powerful noises produced by the "acoustic laser" can actually alter the natural rhythm of brain waves. But there are more common devices which emit sound in the infrasonic range: ventilating fans, airplanes and rockets to name a few.

Even more subtle is the effect of noise on personalities. A study of steelworkers, for instance, found that men who worked in noisy conditions were more aggressive, distrustful and even paranoiac than were similar employees who worked in quieter circumstances. The noise-exposed workers also were far more likely to quarrel with their foremen. The effects of noisy jobs carried over into home life, too. Workers exposed to high levels of noise had twice as many family problems as did similar men who worked in quieter surroundings.

Even mild noises can interrupt dreams. Researchers in Switzerland, West Germany and Canada found in studies on sleeping subjects that the noises of nearby motor traffic, or of a radio or television in the next room lift the sleeper from a deeper to a shallower phase of his sleep. During the working day, people thus deprived of deep sleep can be irritable and cranky, feel fatigued, have daydreams and be mentally disorganized. In severe cases it can even lead to hallucinations, paranoidal delusions, and suicidal and homicidal tendencies.

The harm of our civilization's noises is well illustrated by contrast with the lives and health of the Mabaan tribe of southeast Sudan who live in an eerily quiet environment (below 40 dB). They have been studied by Dr. Samuel Rosen, a New York ear surgeon, and by Dr. Jansen, among others. Mabaans have incredibly sensitive hearing, even when they are very old. (The old Mabaans also do not have hardening of the arteries or high blood pressure, but this might be due to their low-fat diet.) Other researchers found the same was true among the Todas, a tribe that lives in a very quiet pastoral area of India.

However, in the United States, Dr. Rosen points out, "We now have millions with heart disease, high blood pressure and emotional illness, who need protection from the additional stress of noise. Rest, relaxation and peaceful sleep are necessary to all, especially to those already tense or ill. Innumerable noises invade the daily lives of great masses of people, yet nobody becomes indifferent to them. Even though such noise is not likely to damage the hearing, it does inflict stress, tension and sometimes intolerable nervous strain. There seems to be little doubt that noise pollution is a health hazard."

The sonic boom is a special case. It is in the category of explosive, and is therefore typically measured not in decibels but in pounds per square foot. While a sonic boom's pressure varies, depending on a number of factors, it is nominally equivalent to about 130 dB and is particularly damaging not only to people but things. Of course, engineers have long been aware of the structural damage of noise on certain materials. Metals, for example, develop cracks with constant noise of the right characteristics, just as a singer's voice can crack a glass. Tests in Oklahoma City and St. Louis show that sonic booms can break windows and crack plaster walls. They have damaged irreplaceable archaeological ruins, such as those at Canyon de Chelly, Navajo and Arches National Monuments, and Bryce Canyon National Park. Sonic booms also do much hidden damage, especially to private homes. This was pointed out by Harvey H. Hubbard, head of the Acoustics Branch of the National Aeronautics and Space Administration. He explained that under the shock of a sonic boom a house "is forced laterally as a result of the initial positive loading in the front surface. Then it would be forced inward from all directions, then forced outward and finally forced laterally again because of the negative pressures acting on the back surface."

Ironically, while our nation is at its noisiest, it has more materials and techniques for quieting noise than ever, and some small beginnings have been made.

The easiest way to protect your ears from noise is to cover them with your hands. And, when jet or subway or siren noises are unbearable, this often is what we do. Somewhat more effective are earplugs: Glass down and silicone rubber are better than cotton for this. Far

Until our society outgrows its noisy habits,
the only solution for some people will be earplugs.

Noise is unwanted sound. What is one man's music may be another's cacophony.

more effective, though, are specially designed earmuffs.

Even larger barriers to noise than earmuffs are building walls. Unfortunately, when modern construction techniques stopped making inside walls of brick, and started using wood-and-plaster, they reduced the noise opaqueness of walls. Compounding their noise transparency, walls too often are built so that adjoining apartments share heating/air-conditioning ducts and have electrical outlets and medicine cabinets which are placed back-to-back—convenient openings through which conversation, music and other noises pass.

Proper construction techniques can make walls effective barriers to noise, instead of bearers of noise. Noiseproof walls essentially rely on the principle of construction which allows each side of a wall (or floor-ceiling) to vibrate freely, without transmitting its sounds to the other side. This means, for instance, that the plasterboard on each side of a wall is nailed to separate lines of two-by-four-inch studs, instead of plaster on both sides of the wall being nailed to two sides of the same stud.

Techniques like the staggered-stud wall are being used more frequently in new office and apartment building construction, as are other quieting devices such as storm doors and windows, heavy, sealed doors, and the use of acoustical ceilings and walls. One reason is that quiet construction is more desirable and rentable, and so mortgage agencies may specify sound transmission maximums when they lend their money. Another reason is that building codes are slowly being changed to require quiet construction. Among the first in the United States was New York City's code changes of 1968; most European countries have enforced such codes for years.

There are things you can do to quiet existing homes and offices. Carpets on the upstairs floor, for instance, will absorb the impact of heels. Heavy draperies in front of noisy windows or walls will not only absorb noise coming through from outside the room, but will absorb noise inside the room and reduce the reverberation time (this is the "liveliness" of a room which makes sounds seem to hang in air). Draperies, carpets, soft upholstered or inflated furniture, and acoustical walls or ceilings all work to absorb sound in a room and to impede its reflection and, thus, reduce its reverberation time.

Closing all windows and doors and turning on the air-conditioning helps combat outside noises. Then all you'll hear is the hiss or "white noise" of its flowing air. (This masking-noise principle is also used in records of the surf and in pillow speakers that block out noises for light sleepers.) Caulking the windows and weather-stripping the doors help, too. Noisy plumbing can be quieted by inserting cork or neoprene wherever pipes come in contact with studs or other

Ironically, while our nation is at its noisiest, we have the needed technology for quiet.

solid structural parts. Replacing loose or worn faucet washers eliminates chattering or whistling. Lowering the setting on the heater thermostat eliminates the noises often caused by too-hot water.

But far better than blocking or masking noise is *preventing noise*. There are some signs of a start in this direction such as the quiet steel garbage can developed by a noise-control engineer; it makes a thud instead of a clang when dropped. Humming pile drivers which work by vibration are very slowly replacing the noisy steam-driven variety. There are also quieter air hammers for breaking concrete and quieter compressors to power them. Quiet vacuum cleaners and quieter power mowers have also been designed, but these will not be marketed until the public, the courts or government demands them.

The most effective and least expensive way to quiet machines is not to add silencers. Such measures are expensive and not as effective as if the machine had been designed for quiet from scratch. The "whisperized" pneumatic drill—a typical steam hammer with muffler added and encased in a box—is, at best, a temporary answer. It takes far fewer dollars to hold down decibels at the early stages of design than it does to reduce them later, once the machine is operating. Prime examples are airplanes, which, ever since the Wright Brothers, had been growing noisier as engines became more powerful. Not until the 1960s, however, when the noise of jet engines pierced our dreams and frightened our children, did people start complaining and even suing.

Designers responded by attaching noise suppressors to the jet engines. Unfortunately these devices also reduced the thrust of the engines, which meant that pilots had to add power which brought the noise back up. On the other hand, the new generation of jets—the Douglas DC-10, the Boeing 747 and the Lockheed 1011—are quieter than the older jets because less noise was designed into them from the start; air is moved more slowly through the engine's exhaust, reducing "whine." Noise does not increase proportionately with thrust in these new "high bypass" turbofan engines, which meet the current FAA noise standards set under the Aircraft Noise Abatement Act. Further quieting of jet engines should result from federally funded research now being conducted by the Air Force and by the National Aeronautics and Space Administration. Nonetheless, the problem of jet noise will long be with us. Eighty-five percent of all commercial jet flights in the United States are currently flown by the older, noisier generation of jets.

One of the problems with airport noise is a jurisdictional hassle. Most airports are owned by cities or municipal agencies, while aviation is legally under the jurisdiction of the FAA. Thus airplane noise, beyond the federal standards set for engine noise, can also be thought of as a problem in land use. With proper ground-transportation planning, it should be possible to put new airports far from towns and to route air traffic so that planes do not pass over residential neighborhoods on takeoff and landing. At the same time, it has been suggested that zoning laws be used, especially in the case of new airports, to discourage residential building nearby.

Planners and architects should be aware of the land-use aspects of noise. Noise that isn't, or can't be, readily eliminated often can be contained. Noisy machines can be walled, for instance, so that the noise doesn't

The principle of masking noise suggests
a constant "white noise" to neutralize racket.

bother the entire factory. Noisy industries can be kept to one part of town, not dispersed among residential communities. Busy streets and highways, and even railroads, can be placed in graded cuts to keep traffic noise confined below grade.

The beginning of a meaningful solution to noise problems, as it is with many other problems, lies in the law. Here and there, citizens' legal right to quiet has been confirmed by courts. Some high-court decisions have favored persons who lived close to noisy airports and, in some states, courts now consider noise as a health threat, one against which noise-deaf workers can claim compensation.

Cities, which are America's noise centers, lately have begun adopting specific maximum-decibel ordinances aimed at controlling noise. The toughest local antinoise ordinances went into effect in Chicago in July 1971. Among other things it limits the amount of noise from internal combustion engines, whether in automobiles, boats or chain saws; the noise ceiling will be lowered in steps to a 1980 minimum. Since 1971, some suburbs around Chicago have adopted the Chicago standards. And other cities, such as Baltimore, Kansas City, New York and Madison, Wisconsin, are following suit.

The federal government, at last, is also responding to the need for quiet. The Occupational Safety and Health Act of April 1971, which includes protection standards against noise, was one step. Other mild steps have been taken by the Federal Housing Administration in the way of making recommendations for quiet-construction techniques and noise assessment guidelines.

In 1971, the Congress established the Office of Noise Abatement and Control in the Environmental Protection Agency; the new unit spent its first year gathering data for its "Report to the President and Congress on Noise." This year the Congress is moving toward passage of a National Noise Control law. On February 29, the U.S. House of Representatives passed H.R. 11021, a bill which would set national standards for noise levels of new products, such as automobiles and lawn mowers, and would allow citizens to sue the manufacturers of noisy products. It also calls for stronger measures to reduce airplane noise. As of this writing, the House bill is being considered in the Senate, along with S. 3342, which differs primarily in assigning responsibility for enforcing airplane noise standards to the Environmental Protection Agency rather than the FAA.

It will take more noise to get such antinoise laws passed—citizen noise—and there are some vigorous citizens' organizations already involved. Chief among them are the Citizens Against Noise (CAN), with headquarters in Chicago; Citizens for a Quieter City, New York; and the Citizens League Against the Sonic Boom, Cambridge, Massachusetts.

Even under the best of circumstances, a quiet America will be a long time coming. Laws that forbid noisy equipment call for step-by-step phase-outs. And any relief from noise will be a painful reversal of a long-term trend. In his *Impressions of America,* a distressed Oscar Wilde said in 1882: "America is the noisiest country that ever existed. One is waked up in the morning not by the singing of the nightingale, but by the steel worker."

Would you speak up, Mr. Wilde? We couldn't quite hear you.

Dr. Minobe (center) takes a Sunday stroll in a main street in Shibuya, where all traffic has been barred.

By David K. Willis

Mr. Antipollution stirs up Tokyo

The 'mayor' of the world's largest city fights an uphill battle against appalling smog, noise and dirty water

Tokyo is a grimy jewel in Japan's industrial crown. From the air it is a gigantic pall of rust-colored smog. Whole stretches of rivers and harbors are bright brown. Industry has pumped cadmium, mercury and other chemicals into them for decades. Public outcry, which began in the mid-1960s, is only now beginning to have a genuine effect.

That Tokyo has made any progress at all to save its environment is due to a most unusual Japanese political figure, who generates and leads public protest. Wrestling with the effects of decades of almost uninterrupted industrial expansion, he is an authentic intellectual, who taught economics at universities for 40 years before being dragged into politics, almost against his will.

His name: Dr. Ryokichi Minobe (pronounced ree-oh-kee-chee mee-no-bee, with all syllables evenly accented)—an impeccably groomed man whose soft speech combines Japanese courtesy with the utmost precision of language.

Now serving his second four-year term as governor of Tokyo (equivalent to an American mayor), this deceptively mild, gray-haired chief executive is "Mr. Antipollution" himself to millions of Tokyoites. One of his first campaign slogans in 1967 was, "Give Tokyo Back its Sky!" Since then he has made the fight against pollution—of the air, of water and in the forms of excessive noise and land-sinking—the main characteristic of his administration.

He has had some successes. Whereas 15 smog alerts were issued in 1968, there were only five in 1970—and none at all in 1971. Sulfur dioxide content of the air over Tokyo dropped noticeably last winter. The governor has devised and pushed through his Metropolitan Assembly a number of tough new laws. One of Tokyo's five major rivers, the Sumida, is cleaner now than five years ago as a result of a concentrated drive including more treatment plants. Significantly, he has caught Tokyo's imagination with his new proposals, even though, as he is the first to admit, the problem of photochemical smog—caused by the interaction of the sun's rays with automobile exhausts over a period of windless days—is worse.

From the depths of a tan leather chair in his executive suite, he assesses his fight so far: "The pollution situation continues to improve, though slowly—except in the fields of photochemical smog and land-sinking. It is worse on a national basis, however. Efforts are being strengthened . . . but the road ahead is long."

He pauses, joins his fingers together, leans back. "[My administration] has certainly helped to improve the situation in various ways and degrees," he allows, "but the achievements are not very great in comparison with what citizens are still suffering. Perhaps the effect of what I have done is mainly in arousing the attention of the people and authorities to the terrible harm environmental disruption gives them in return for material improvements. . . . But there are so many things yet to be done. . . ."

Almost half of the people are packed into cities that occupy a mere 1.2 percent of Japan's tiny land area, and the crowding is getting worse. By 1985, some 70 percent are expected to live in the cities. And the economy, though slowing somewhat from the headlong pace of the late 1960s, still roars ahead.

The soft Minobe voice and mild Minobe manner belie a toughness of commitment that has sometimes led to speeches extraordinarily blunt for a land where public utterances usually reflect bland consensus. Two years ago he told visiting members of the Detroit Economic Club that Tokyo resembled an old coin, shining brightly on its face, "but, if you turn it over, the tail is rusty, ugly and decaying. My position is that of a jeweler who is brushing it night and day. . . . It is not air we breathe . . . it is carbon monoxide, sulfur dioxide and various other elements which are not the normal components of air. . . . Several big rivers . . . are big, uncovered sewers. . . . Nations and cities must be more united in conducting more powerful and effective combat to control [this] huge specter of the 20th century. If we lose the war, I suspect that cities of the

The author was in Japan and Korea for two years as a correspondent for the Christian Science Monitor *and is now its American News Editor.*

Seated at his desk, Dr. Minobe surveys a map pinpointing Tokyo's major pollution sites.

world, in the long run, will have to end up as gigantic and elaborate tombstones of Mankind."

The 68-year-old governor, the son of a famous law professor and a baroness, was raised in the world of the aristocracy. Nonetheless, he has a feeling for the common man which the people of Tokyo sense and to which they respond. He is outraged, in his quiet, thorough way, that postwar industrial expansion, forged by the closest of alliances between the national government and Japan's *Zaibatsu,* the tycoons of big business, has polluted almost without check. The effort to curb industry, so complex and difficult in America, has been much more so in Japan, where big business, after all, has carried the flag of national pride so far forward from defeat in 1945.

To have been an intellectual in Japan for the past 40 years is to have been, by and large, an exponent of Marxist theories. Dr. Minobe and his father, Tatsukichi Minobe, strongly opposed the fascist, military-dominated governments that led Japan into Manchuria and then against the United States in the 1930s and 1940s. As a result, in 1938, his father was forced to retire from public life and his books were banned. And, in 1940, Ryokichi himself was jailed for two years as a suspected Communist.

The young Minobe lived as a farmer for the rest of the war. He spent two years as an editorial writer for the giant *Mainichi Shimbun,* a national newspaper. He gained repute by his skill in reducing complex economic problems to the language of the layman. Often he appeared as a commentator on television. Tall for a Japanese at five feet ten inches, he retains even today the lean look of a man who was an expert athlete at school—superior in golf, tennis and skiing.

When he was asked to run for governor, he was about to retire on a pension from his university. No one seriously thought he would win that first campaign, and the governor himself says he "felt like a sheep going to slaughter."

Astonishingly, he won, and was reelected overwhelmingly four years later.

His primary goal has been to obtain publicity about pollution evils, to bring pressure on his Metropolitan Assembly, on big business and on the federal government, which retains primary control in some key areas —regulation of auto exhausts, for instance. All the governor can really do is intensify spot checks of individual cars and slap fines on the owners. He does better with his own ordinance against emissions from factory smokestacks, which is tougher than the national law. But it is an uphill fight. So much so that in May when he was married quietly to his former secretary, Tokiko Inoue, he said: "I have no time for an elaborate ceremony. I am confronted with an extremely busy schedule, such as garbage disposal, photochemical smog and numerous other problems."

He seeks ways to dramatize these issues to the public. Having initiated his plan to order city-wide smog alerts when sulfur dioxide levels reached the danger point, he began riding a regular commuter bus to city hall whenever an alert was in effect. Straphanging, he talked to passengers in the manner that continues to win him unprecedented support. Regularly, public opinion polls give him a 70 percent rating in the city.

Traffic bans make a "Pedestrians' Heaven"

When Osaka successfully banned auto traffic from some inner-city streets on certain days, the governor alarmed shopkeepers and his conservative critics by doing the same in Tokyo on August 2, 1970. On that day he appeared in a bright sports shirt, strolling on the famous Ginza, drawing the television cameras and the flashbulbs and the newsmen of the national media, all of them headquartered in Tokyo. Today the plan is a great success. Some 350 streets now have partial traffic bans: 268 during housewife shopping hours and rush-hour congestion, 82 during schoolchildren's vacation. Seven huge thoroughfares, including the Ginza and Shinjuku, close on Sunday (now a major shopping day). "Pedestrians' Heaven" it is called; a steady 160,000 to 170,000 flock to the Ginza every Sunday, and 300,000 to Shinjuku.

While general smog alerts are fewer and fewer, photochemical smog persists. Several thousand people received hospital treatment for eye and throat ailments

in the summer of 1970, when eerie white smog lay heavily on parts of the city for day after day. The overall level of nitric oxides stayed below 0.5 parts per million—the warning level—but with Japan now producing more automobiles and trucks per year than any other nation except the United States, and cascading them into a very small land area whose streets were designed for the rickshas of feudal times, the problem continues to worsen.

Urgently needed is an expanded city sewage system. Only 42 percent of the citizens are covered by the existing system. The governor is pushing ahead with more, together with plans for a large underground garbage-treatment center, as well as more aboveground incinerators.

To ease the endless expanse of gray, unpainted ferroconcrete that makes up suburb after suburb of Tokyo (concrete resists earth tremors better than bricks), Dr. Minobe also plans to turn reclaimed land, former factory sites and a large soon-to-be-vacated U.S. military base into parks. If he succeeds, Tokyo will be about equal to Paris in park space but will still be far behind London and New York.

Perhaps the most encouraging aspect of the battle today is that public pressure is rising steadily. The national news media give full play to pollution stories—examples of suffering, suggested remedies, new bills—and, over and over again, to the efforts of the governor, who continues to feel that he has only just begun to win results.

Recently, he has attracted flurries of national publicity by traveling to Pyongyang, capital of North Korea, and to Peking. He has also visited New York, London and Paris, in an ambitious plan to set up a global league of major cities. This, he says, would allow the cities to exchange ideas on solving the world's major urban ills.

It is a logical extension of his concern for the man in the street, for the business of living from day to day in vast, drab, polluted urban centers, where life too often is wretched. He works his way quietly, methodically, precisely, through long crowded hours, his broad smile flashing out now and then, his criticism of the national government never far from the surface, his popularity consistently high in his own city, a patrician among politicians, an unmerciful critic of his own Socialist party backers when he thinks it necessary, a man whose critics see as his main fault the same quality his supporters prize: an idealism rare in Japanese politics, but genuine, nonetheless.

Rising above the smog-shrouded city is the 36-story Kasumigaseki building and Tokyo Tower.

Text and photographs by John Reader

Too many elephants: They can be shot or allowed to starve

The overpopulation problem in Kenya's Tsavo National Park combines with drought to create a tragic scarcity of feeding areas

If you had visited Kenya's Tsavo National Park during the recent drought and had seen the carcasses of some of the thousands of elephants, or had watched the gaunt survivors looking as one observer put it "like bundles of bones with an old rug thrown over them," you might well have thought the African elephant was headed for extinction.

They are so grand, they seem so self-sufficient. Left alone they are harmless ("Nature's great master-peece, an Elephant, the oneley harmlesse great thing" said John Donne in the 17th century), yet even in the sanctuary of a national park, Man does not seem able to do right by them.

Once they roamed the entire continent, but since Man began to live from the land of Africa the elephant has been jostled along to make way for agriculture and habitation. They have been hunted with bow and arrow, with spear and rifle, for meat, for sport and for their ivory: Between 1850 and 1890 the ivory from an estimated 50,000 elephants was sold each year on the London market alone.

Now there are probably about 500,000 elephants left in Africa. In East Africa where once, some say, they were "as common as pigeons in an English wood," there are probably 200,000. Most of these are in the national parks which, though vast (comprising about 20,000 square miles in area), in fact represent a small fraction of the total land area.

Tsavo National Park covers more than 8,000 square miles—an area about the size of Massachusetts. No one knows how many elephants were there when the park was established 24 years ago, but it is certain that when the long rains failed at the end of 1971 there were far too many: 20,000. During this drought the seasonal water holes dried out entirely. An elephant needs to drink at least every second day, and many chose to stay near the few permanent water sources. As the elephants consumed all the edible vegetation in the immediate vicinity of the water, the distance between food and water grew alarmingly, reaching a peak of 30 miles. All the elephants grew weak from lack of protein. Of the 13,500 elephants in the east section of the park at least 3,000 died.

Tsavo was chosen as a national park, not so much because it was particularly suitable as a park but because it was unsuitable for anything else. Fortuitously, the tsetse fly made ranching impossible and the low and erratic rainfall pattern made agriculture difficult. Historically, about once every decade the very dry weather of the areas to the north extended into Tsavo, and, at such times, rainfall would drop to less than ten inches per year.

Now Tsavo is one of the largest game sanctuaries in the world, carries the highest populations of elephant and black rhino in Africa and has a greater variety of fauna than all but a few parks. The habitat varies from near desert through plain, bush and woodland

A Tsavo Research Unit staff member is surrounded by some of the 2,000 lower jaws collected in order to determine sex and age of the elephants that died.

In the last three years John Reader, a British free-lance photographer and writer, has covered much of Africa from his base in Nairobi.

Too many elephants

to almost tropical forest on permanent waterways.

Lions, cheetahs and leopards patrol the area; gerenuks and oryxes thrive in the dry bush. Along the rivers one can see hippos and crocodiles. The Mombasa to Nairobi road and railway slice the park into Tsavo West and Tsavo East. They cover 3,000 and 5,000 square miles respectively and are administered as separate parks.

Drawing a line on a map does not make a national park, but, once that initial step is taken, Man's influence becomes paramount: Tsavo was never entirely devoid of people. There were always nomads passing through, while along the Galana River were the Waliangulu, as settled there as people who live entirely from the earth can ever be. They were hunters who used a bow with a pull of 80 pounds. They tipped their arrows with poison and hunted elephants.

The Waliangulu may have served to some extent as a controlling factor on the elephant population. Of course, their poaching benefited the shady ivory dealers of Mombasa who paid the hunters paltry sums and made enormous profits. Once Tsavo became a national park, poaching was virtually wiped out and, along with it, the way of life of the Waliangulu. Recently there has been a rise in poaching activity, especially in the north. In late 1971, rain outside the park enticed elephants across the park boundary, where they were snared and shot with poisoned arrows.

With the formation of the park, however, Man ceased to be an integral part of the Tsavo habitat and became instead its controlling factor.

There is no fence around the park, but the encircling human settlements and hunting blocks are, in most cases, just as effective. As these external pressures increased, more elephants found safety within the park—and they began to knock down trees.

In 1954 Tsavo East Park warden David Sheldrick drew attention to the growing elephant population and the consequent destruction of the commiphora woodland. In 1963 zoologist Phil Glover conducted a survey of the park and concluded that "if the habitat is to be preserved in its present form . . . the numbers of elephants will have to be controlled." In 1966 the Ford Foundation made a grant of $187,000 to finance a three-year research project to investigate "the vast and increasing numbers of elephants which are said to be destroying the park by their wholesale destruction of trees." Its director was a Cambridge University zoologist, Dr. Richard Laws, who went to Tsavo National Park in 1967.

Laws had considerable experience in wildlife research and management. He had worked on seals and whales in Antarctica, elephants and hippos in the Uganda national parks. He began his study by analyzing physiological data from 300 elephants shot at his request in Tsavo East and found that instead of a single homogeneous population, the Tsavo complex, in fact, held ten distinct elephant populations, each with its own range and structure. Nine out of the ten were in a state of decline, signaled by retarded puberty and a lengthened calving interval.

The decline was most marked in those ranges that were most overused. Laws suggested that some populations should be allowed to continue their decline, to see what the ultimate effect on the animals and the habitat would be. Others, he said, should be manipulated by varying degrees to establish what might be called halfway habitats, while yet others should be drastically reduced to keep the area as it was. Such a program would require more research, more samples and more killing (or, politely, cropping).

Doubts and a looming crisis

It is axiomatic in scientific research that high percentage samplings lead to greater accuracy of findings. Laws' critics looked hard at the proposals and found that this could mean the slaughter of a further 2,700 elephants. Suppose he was wrong? Cropping thousands in error could be an irrevocable mistake. The national park trustees overruled Laws on the grounds that there was insufficient evidence for such drastic action. Laws resigned, leaving the Ford grant to expire in 1969 with very little to show for its money.

Meanwhile the Tsavo elephant population continued to grow as pressure from the surrounding settlement and hunting increased. Over the last 20 years the elephants have brought about profound change to the habitat in Tsavo. Vast tracts of land that once were thick woodland are now open grass plain studded with the stumps of dead trees. Other areas where the damage is more recent resemble a World War I battlefield.

Most of the larger trees that the elephants eat (commiphora, acacia) are dying out and being replaced by grass and shrubland, with an occasional tree that they don't eat (melia and delonix), so the plains game —zebras, oryxes, gerenuks—seem to be increasing.

Thus the 1971 drought brought to a crisis point a problem that everyone had seen coming for years. Having destroyed most of their food resources, the Tsavo elephants began dying by the thousands.

Is a park a natural place?

In the view of the national park trustees this was merely a harsh demonstration of natural cause and effect, with the emphasis on "natural" and stressing that human interference would be wholly unnatural. The drought was apparently taking mainly the weaker elephants and small calves—a natural culling process. Scientists of the Tsavo Research Centre have been collecting the jawbones of dead elephants to determine their ages precisely (see page 26). An opposing school of thought holds that there is nothing more unnatural than a national park, and that Tsavo's optimum elephant population level must be established, and the excess shot before the park becomes a desert.

Those who seek such intervention argue as follows: The 1970s will very likely see the end of the vast African wilderness myth. East Africa's population is growing at 3.3 percent per annum, a rate that will double the population in 13 years. Farming and ranching capacities are increasing, too; nomadic tribes like the Masai, the Rendille and the Samburu are being urged to settle down, to make a business of their cattle and join the cash economy bonanza.

Pressures on land resources will increase and, ultimately, the hard fact will have to be faced that there cannot be both truly wild animals and human development in Africa. Conservation, they say, is after all a strictly European concept conveniently born after the bulk of Europe's rural development. Whether it can be practiced in Africa to the all-around benefit of African interests is questionable. Critics maintain that too much hazy sentimentality prevails. They point to the ambiguity of policies that allow the shooting of 4,000 to 5,000 elephants annually outside the parks in defense of human interests—thus turning the parks into havens of safety—while refusing to control the numbers within the parks.

As they see it, the evidence for management in Tsavo is overwhelming. There is evidence, too, that the park itself may be overwhelmed. Murray Watson, a wildlife management consultant, estimates that "there are 100,000 elephants knocking at the door of Tsavo right now."

Ian Parker, a 35-year-old white Kenyan who runs

Inspected by vultures, one of the 3,000 that starved lies near lush shrubs that are unpalatable to elephants.

Tsavo's Sheldrick: "It is arrogant to think we can have things to our liking."

Hastening the destruction of part of its own habitat, an elephant feeds on a broken baobab tree.

Wildlife Services and carried out elephant cropping for Laws in Uganda and Tsavo, says: "Tsavo is a political unit, not an ecological one. The elephants are not natural there, they have been forced in by surrounding human populations. What you see now is the result of compression, intense compression. It is in circumstances like this—drought, starvation and the chance of disease—that the extinction of a species becomes a real possibility.

"Tsavo is an island in the midst of human settlement. This means there is no chance of recolonization by other species. The Burchell's zebra may increase in numbers as the habitat changes, but a Grévy's zebra is not going to drop out of the sky. In Tsavo they are allowing baobabs and commiphora trees to die out. There are a lot of insects, reptiles and small fauna in that woodland and by not managing the elephants they are mismanaging an abundance of species.

"There is more known about the elephant than about the red deer in Britain and they've been cropping the deer in Richmond Park regularly for years. To say there is insufficient information is simply not good enough."

The opposition to direct human intervention is personified in David Sheldrick, warden for more than 20 years of Tsavo East National Park, where the effects of the drought have been most severely felt. It is his opinion that nature should be allowed to take its course, that there must be no action until there is definite proof that the present state of affairs in Tsavo is entirely detrimental or that action would be beneficial. It is perhaps indicative of the stature of the man that his view prevails.

Sheldrick (see photograph p. 29) is a soft-spoken man in his early fifties who runs his park in the military manner. He wears precision tailored bush-clothes and cares greatly for all animals.

"You can't keep a park of this size static," he says. "It is arrogance on our part to think we can have things to our liking. We look at an acacia tree and think that's a nice tree to have a picnic under, but some scrubby thing might be more valuable.

"People tend to apply the standards of a temperate climate to Tsavo. But here we deal in extremes, and there are so many species involved. If you treat just one you really don't know what you're doing to the rest. Conservation is maintenance of the energy cycle; the greater the turnover the better. The only thing that can satisfactorily control large animals like elephant and rhino is drought.

"When I first came to Tsavo it was thick bush virtually all over. You were lucky to see an elephant disappearing into the bush. Our goal then was to open roads for the tourists and control the poaching.

"In 1954 I drew attention to the destruction of the commiphora. It was a problem but we didn't want to make a nuisance of ourselves. Our future was uncertain; we got maybe one tourist a week. We knew nothing about elephants and there weren't any scientists who wanted to get involved. Then came the 1960-61 drought. That changed things. The park resembled a battlefield. Julian Huxley came, Fraser Darling came. Everyone said the place was going to become a desert.

A bull elephant wanders among a herd of buffalo in one of the areas in Tsavo not yet despoiled.

Reduce the elephant population by one-third, they said. But no one knew how many there were.

"We began counting them. I was all for culling in those days. Phil Glover looked at the data and said we could reduce the population by shooting the young female stock. But you can't shoot elephants out of a herd without making the rest of them savage. We had to think of our potential tourists.

"The other possibility was to shoot whole herds. Then people said you can't just shoot the animals and leave them to rot, they must be utilized, but the recovery and marketing problems would be enormous. There were all sorts of solutions offered. One suggestion was that the meat should be tethered to balloons and flown out; another was to build a factory, boil up the meat and sell it as pet food to America.

"We decided to let things ride. I began to have doubts about culling. Looking around the park I could see that nature was taking a hand. As the trees were knocked down, the park was being colonized by grasses and creepers that covered the ground, reducing the heat in the soil. There was a buildup of plains game and, with the bush opening up, the park was becoming better for the tourists. We had to think of revenue. It was doubtful if Tsavo would have survived as a park with tourist potential if it had remained as it was; tourists wouldn't come to see the backside of an elephant disappearing into the bush. It was obvious the park wouldn't support a large elephant population in times of drought and one of two things would happen: Either they would move out or suffer a population crash. To cull them might reverse a chain reaction that could be beneficial in the end to the whole park.

"And now we have this drought. From observations of the surviving populations we will be able to tell what the effect on the park has been. This will be significant over the next ten to 20 years. It's a long-term thing. Elephant numbers will probably go down for 20 years and then back up again.

"The surviving elephants are in terrible shape. They haven't the reserves to take another long dry period if these rains fail entirely. More of them will die. But are we interested in maintaining such large numbers of elephants? Do we want an elephant sanctuary?

"This has been a terribly worrisome time, but personally I'm convinced Tsavo is an ecological entity. It is large enough to survive without management. I expect that over 3,000 elephants have died. In a normal year we find about 300 carcasses. In effect the population has been cropped of just about the number of animals the scientists told us to crop."

To critics of David Sheldrick's view, the choice is simple: Introduce a program of planned elephant killing in the park or allow them all to die. Against this contention the national parks trustees can pitch only their longer experience at Tsavo and a questioning doubt of the scientific evidence collected so far. Indeed most of the evidence offered by both camps is more in the nature of opinion, which is not surprising perhaps, for the problem is unique: There is no convenient precedent. There has never been a national park as large as Tsavo with so many elephants.

Time will tell who was right. Unavoidably the score will be the number of dead or of living elephants.

By Mary Sayre Haverstock

A halcyon summer that lingered on and on—in painting

American women were never more beguilingly portrayed than in the canvases of the 'Summer School.' But where were the men?

In recent years the whole realm of American art has been resurveyed by experts. Its lofty pinnacles, vast plateaus and murky depths are now measured and mapped according to the latest methods, with note taken of shifts in polar magnetism and variations in the direction of various currents and mainstreams. The results are now available to the public in the form of large, expensive, many-colored "atlases"—Rand-McNallys, so to speak, of American art.

So detailed are these guidebooks that schools of painting are even pinpointed as to latitude and longitude. But, somehow, blank spots still remain here and there to confound the traveler and get him lost just when he thinks he is traveling a main highway. One such place is the *terra incognita* that still exists, even in the newest of these books, midway between the Hudson River School of the 19th century and the Ash-can School of the 20th. Earlier surveys attempted to bridge the unknown with chapters on Homer, Ryder, Eakins and Sargent, perhaps the four American artists who worked hardest to stay out of "schools" of any kind. Nevertheless, even when there may be a good reason for it, a 35-year gap between formally recognized movements remains faintly disturbing—especially in an expensive art book.

I call attention, therefore, to one little-appreciated but viable American school, which happens to have flourished during precisely those years (1885-1920, more or less) and for which there is no label in the art atlases. The paintings produced by this group, having

In *The Open Air Breakfast* (c. 1888), William Merritt Chase included his wife and baby at the table, two sisters-in-law and one of his Russian hounds.

The Toledo Museum of Art, gift of Florence Scott Libbey

been pretty much ignored for four or five decades, are at last beginning to break out of storage in significant numbers. Museum visitors find them fresh and charming, as do collectors, and the bidding for them is getting brisker every season.

Because this particular movement manifested itself as such only during the months of June, July and August, it might best be called the "Summer School." In all other respects it was quite normal: Its members came from much the same backgrounds and they painted much the same things—at least in the summer—and in much the same way. And whatever their preoccupations during the winter, the coming of warm weather could always be relied upon to touch off in all of them a fresh enthusiasm for their common subject matter: summertime in America.

The summers between 1885 and 1920 were long, long summers. Delphiniums danced with bee balm and bergamot under New Hampshire skies. Crimson poppies rioted across off-island meadows and into the dooryards of Maine cottages. Sunshine, made lazy by the long days, strayed early through the morning-glory vines and into the sunrooms of Chatham and Southampton, presided over picnics and desultory games of croquet across Connecticut, then faded into memory over the Berkshire Hills.

Through these dappled settings moved American Womanhood—Eliza, Ivy, Phoebe, Maude—in her white dress, carrying her parasol, heading for a shady corner of the lawn, perhaps, or bound for a chat in the summerhouse. If the large and consistent output of the Summer School of American painting can be believed, her life, summer after summer, remained almost unchanged for 35 leisurely years.

During those 35 summers she wrote a thousand letters, read a hundred novels, played the piano, sipped lemonade, crocheted a bit, went for long walks—and posed for painters. She reclined in a hammock with her nose in a new romance by Constance Cary Harrison. She sat at her well-appointed writing desk. She lounged in wicker thrones with goose-feather pillows behind her head. She posed in the shelter of a white beach umbrella, with her children romping in the sand close by.

Wherever she went, the sight of American Womanhood in her summer garments and her summer surroundings was irresistible to the painters. They could no more pass up such opportunities than Monet could pass up his water lilies. Soon another sun-drenched summer scene took shape on canvas.

The pictures they painted are not exactly portraits, even though they are portrayals. Phoebe or Maude inhabits the canvases in the same way that sunshine inhabits them. As often as not, she has her back turned or her face averted (below). Her name is seldom mentioned; the artist simply titles his work "Summertime" or "Sunlight and Shadow." She seems to have been painted as the artist found her, with no more emphasis or interpretation than was given the chair on which she sat. So, although the paintings of this school could not exist without American Womanhood, her privacy is always respected. The artist certainly could not be accused of *staring* at her.

Whatever these paintings are—landscapes with figures, figures in landscapes, portraits of nonpeople, nonportraits of real people—Washington abounds with them, for two of the Capital's greatest artistic benefactors, Charles Lang Freer (the Freer Gallery of Art) and John Gellatly (the National Collection of Fine Arts), vied with each other to acquire such scenes.

The author is a free-lance writer on art. She has completed a biography of George Catlin for young readers, to be published at the end of the year.

Courtesy Schweitzer Gallery, New York

The Sun Room (c. 1922) by Childe Hassam. As in so many of these paintings, the woman turns away.

Mother and Child by Frank Benson. The subjects are treated as objectively as the garden bench.

Courtesy Bernard Danenberg Galleries, Inc., New York

Referring to something Rodin had said, Gellatly wrote to the painter Childe Hassam: "The words of the great French artist 'America has had a Renaissance in Art as great as that of the Italian Renaissance only the American people do not know it yet' will be verified. . . . To me the artist's words seem very true, but I feel to go further than he did, for somehow the freshness, originality, beauty and purity in the work of the great group of our artists in the latter half of the 19th century, and the surviving members of the group until the present time [1926], would lead one back through the centuries to the clear beauty in Greek Art."

Renaissance or no, the midsummer paintings by this group speak volumes about a life-style that is long gone, one in which we like to think leisure was something to be used and cherished, not thrown away on the Interstate Highway. It was a life that required both time and space in quantities that today seem lavish if not downright excessive. But as these paintings show, it did not require drip-dry clothing or an expanse of perfect one-inch zoysia grass or a pair of 22-horsepower Evinrudes. The equipment necessary for a summer in the mountains or by the sea was simplicity itself: a hammock, a croquet set, a few rattan chairs, some new novels and a watering can. And, of course, a good cook to serve cold salmon on the piazza.

The big shingled houses in Jaffrey, Chocorua, Rockport and Red Bank, while they may have been lacking in Renaissance fervor, offered a welcome refuge from the poverty and politicking that plagued most painters the rest of the year. The mass-production of steel engravings was effectively monopolizing the middle-class art market with reproductions of "Tuscany Girls" and "Venetian Nocturnes" from abroad. Photography

In the Orchard (1891) by Edmund C. Tarbell. The sitters are all members of Tarbell's family.

National Collection of Fine Arts, lent by Dr. Albert Cannon

was eating away at the profession of portraiture.

But from a wide veranda in August, it didn't seem to matter quite so much whether one should join the Society of American Artists or stick with the National Academy. In that summer ambiance, under that special New England summer sky—part dazzle, part portent—among friends and family, there were other things to consider. Previous generations, finding themselves here, would have got right down to work. There was Mount Washington waiting to be painted, they would have exclaimed. Not so for artists of the Summer School; *they* ignored the mountains and gazed instead at the way the morning sun ricocheted from clematis blooms on a white trellis and the way, at lunchtime, a certain haze crept through the leaves of the big copper beech. For here was *atmosphere,* tangible, paintable, and none the worse for being American rather than French.

Technically, the summertime pictures were often simpler and less ambitious than some of the elaborate experiments conducted by the French Impressionists. But these men were different from Monet or Renoir, and few of them ever knew the anguish of obsession. They did have ambitions, but they were of the Boston kind. They hoped to lead the way upward to a "purer" form of expression, to a higher sensitivity, to a day when Art would be part of the lives of everyone.

And the art critics, if not the man in the street, urged

them on to ever greater heights. Edmund C. Tarbell, one of the most prolific painters in the group, received this accolade from Frederic Newlin Price—and it was typical of many that came his way—"Deep in the shadow of earth a million tiny forces work to bring the flower into the sunlight." Obscure as that compliment sounds today, it summed up the attitude of reverence with which American critics approached the artistic process. One spoke in whispers in the presence of Art; one trod carefully so as not to step on tiny forces.

One biography for all

Away from reverent admirers, at his place in New Castle, New Hampshire ("the most beautiful place in the world"), Tarbell was free to follow his handsome daughters with his sketchbook as they whiled away the summer afternoons. (And his adoring public might have been astonished to know that when he wasn't sketching Josephine or Mercie, he could sometimes be seen cheering exuberantly for the Boston "Bean Eaters" on the Fenway.)

Tarbell was not the only one of the group to be singled out for overawed rhetoric. It was Thomas W. Dewing who excited the most rapturous free-flying prose of all. Royal Cortissoz, who not only passed on art in *Scribner's* magazine but on literature as well, said of Dewing: "Taste, refinement, distinction, the things that mean artistic breeding, these are the things of which a picture of his is all compact." Again, in the ultimate Cortissoz compliment: "Dewing's people have no emotions. It is sufficient for them that they exist."

Everyone with a subscription to *Scribner's* must have envisioned Mr. Dewing as a sort of bloodless, ethereal Whistler, floating through life on his own private zephyr. But his photograph in the Smithsonian's Archives of American Art shows instead a fine mustachioed figure of a man quite at ease in a very untidy studio, with his feet on the couch. While it may have been helpful to Dewing to have arbiters like Cortissoz on his side while he was alive, it is doubtful whether their words are of use to us—or him—today. Perhaps far more helpful to an appreciation of Dewing's scenes of disembodied domesticity might be the realization that his wife Maria was a forerunner of Emily Post and wrote books on *Beauty in Dress* and *Beauty in the Household.*

Without wading through *Scribner's* or the *Boston Evening Transcript,* then, what can be learned about the members of the Summer School? Fortunately, one skeleton biography fits almost all of them. First of all, there is an Old New England Family. Tarbell's ancestors came to Groton in 1636, Dewing's to Dedham in 1640, Childe Hassam's to Manchester in 1684, and so

Courtesy Schweitzer Gallery, New York

Summertime, Gaylordsville, Conn. (1912) by F. Luis Mora. Uruguay-born, he summered in Connecticut.

on. At a certain age, most if not all of them journeyed to Paris where they studied at the Académie Julian under Boulanger and Lefebvre. Then they tended to settle in and around Boston, perhaps teaching a course or two at the Museum of Fine Arts.

The critics never explained one aspect of Summer School painting that is puzzling, to say the least, in this day and age. In hundreds, perhaps thousands, of canvases painted across the Eastern Seaboard from Maine to New Jersey and as far west as Lake Champlain, we see only women and children. Where were the fathers, husbands, beaux? Did they never venture into the orchards and gardens and arbors? Did they eschew the sand dunes? Did they never sip Lapsang Souchong under the elms?

French Impressionists did not exclude menfolk from their summer idylls. Yet one looks in vain through the summer output of Dewing (pages 38-39), Hassam (page 34), Tarbell (page 36), Frank W. Benson (page 35) and the rest for anything more than a token male.

The usual references being mute on the subject, one turns to the novelists of the period and finds an answer in William Dean Howells. He knew New England's spas and summer retreats intimately, and had a fine

ear for veranda chitchat. According to him, the men stayed put in Boston. In *The Rise of Silas Lapham* (1884), a future son-in-law says of Lapham, the paint magnate: "He hasn't given himself any vacation this summer; he has such a passion for his business that I fancy he finds it hard to be away from it at any time." And if the businessmen stayed in the city, then the young men in their employ thought it wise to stay, too. Thus, in the same novel, the father of a marriageable young lady says to his wife: ". . . It strikes me that a young lady couldn't do better than stay in or near Boston during the summer. Most of the young men are here, kept by business through the week, with evenings available only on the spot, or a few miles off. What was the proportion of the sexes at the seashore and the mountains?"

"Oh, twenty girls at least for even an excuse of a man," replies the wife. "It's shameful."

The winters were not so benign

Summer after summer went by and the delphiniums and poppies bloomed again and again. But the times were changing. Winter after winter there were strikes, panics, foreclosures, immigrant invasions, mergers, scandals. These did not take long summer holidays.

Tarbell remained a summertime man to the end, and so in his distinctive way did Dewing. J. H. Twachtman, on the other hand, turned his back on the joys of summer and family and began devoting himself almost exclusively to frostbitten scenes of the numbing Connecticut winter. Frank W. Benson took up printmaking with considerable success and went on to become the "dean of American duck etchers." William Merritt Chase (pages 32-33), not a real insider (he was born in Indiana), packed up his eight children and innumerable furred and feathered pets and started a class in landscape painting out on the Shinnecock Hills of eastern Long Island, whose light and life so attracted Winslow Homer years earlier. It was Childe Hassam who kept the old American summer intact, through world war and victory, and, though the scene changed, the shimmer remained.

When that obstreperous bunch of former newspaper cartoonists called "The Eight" came along (see SMITHSONIAN, September and October 1971), the summertime they painted was the teeming, steaming season of New York stoops and rooftops, hot dogs and Coney Island. Jaffrey and Bar Harbor and the Isle of Shoals could have been a million miles away.

Had they ever existed? One wants to believe they did. And so, it seems, did Henry James, who once said to Edith Wharton: "Summer afternoon—summer afternoon; to me those have always been the two most beautiful words in the English language."

Summer by Thomas Dewing. A poetic, if improbable, work by one of the most original of the group.

National Collection of Fine Arts, gift of William T. Evans

Whirling at 14 miles per hour, Charles Looff's grand carrousel, built shortly before 1910, enlivens Crescent Park, Riverside, Rhode Island. Carved figures behind adorn the band organ.

Text and photographs by Barbara Fahs Charles

Mix antique charm and artistry, add children and spin

Born of medieval jousting, a carrousel or a merry-go-round, as we know it, is a joyful example of the Good Old Days

If you ask about the carved animals on the merry-go-round at a nearby amusement park, you usually hear variations on the same theme: "They're more than a hundred years old, hand-carved in Germany. . . . Now this machine here, she's a real beauty. She isn't your ordinary, everyday merry-go-round. She's a real honest-to-God carrousel."

You won't convince the old man who has operated the machine (and perpetuated the same information about it) for years, but such stories are bunk. They denigrate what was once a lively little home-grown American industry.

Hand-carved in Germany? No. Aside from one or two recent imports, the merry-go-rounds one sees on this side of the Atlantic were built here. And not so long ago as antique dealers would like us to believe.

Not an "ordinary merry-go-round"? Nonsense. The words *merry-go-round,* which originated in England, and *carrousel* from France are virtually interchangeable. Some parks feel *carrousel* sounds fancier, and use it on signs, but in the back office it's always *MGR:* merry-go-round.

By whatever name, the machines do have old-world origins. The Italian word for a medieval tilting match or tournament was *carosello,* which was derived from *garosello,* the diminutive of quarrelsome, and *carri-*

Barbara Fahs Charles has studied merry-go-rounds for more than a year, traveling widely around the United States to prepare an illustrated book.

Frog-eating snake embellishes a giraffe's neck
on 1907 machine found at Moosic, Pennsylvania.

Hunter's bag, a rabbit, hangs
from the saddle of a Looff horse.

Fierce griffin adorns a chariot carved
by Illions about 1914: Agawam, Mass.

Griffin and snake face off on a chariot by
C.W. Parker about 1913. It's at Riverside, Calif.

This finely carved Charles Looff greyhound
is at Adventureland, East Farmingdale, New York.

Philadelphia Toboggan carved this small face
peering from a saddle at Marine Pier, Wildwood, N.J.

Cat carved at Dentzel's factory early in this century is now on Kentucky machine.

At Fun Forest, Seattle, the whole merry-go-round is jeweled like this lion by an unknown carver.

Bird on a chariot's prow is on a machine now at Lakeside Park, Denver.

cello, a small chariot. Over the centuries, jousting remained a stylized sport, especially for royalty. In 1662, Louis XIV of France gave a carrousel so elaborate that the space in Paris between the Louvre and the Tuileries was named for it—Place du Carrousel.

To practice for such occasions, young nobles and princes were later provided with simple rotating machines on which they could ride around and try to spear a ring. This seems to be the early ancestor of the merry-go-round and the tradition of catching the brass ring for a free ride.

American carrousel makers were generally immigrants. Looff, Mangels, Stein and Goldstein, Armitage and Herschell all came to this country as young men. Except for Gustav Dentzel, whose family made merry-go-rounds in Germany, and M.C. Illions, born in Russia, who learned his trade carving circus wagons in England, the great American carvers developed their skills and trademarks here.

Never on Sunday?

In America, the craft began primarily in the mid-19th century. During the winter, a carpenter might make a simple frame with rudimentary "flying horses" that swung out as it turned. He'd try it out in the spring and maybe take it to a few summer fairs. If he was lucky, he made some money and, by not running it on Sunday, avoided bringing down upon himself the wrath of more religious neighbors. His power came either from a horse or some local boys who wanted free rides. Later, portable steam engines gave faster rides. Still later, with the advent of the electric trolley, elaborately carved three-, four-, even five-abreast carrousels were built. These are still found in many parks.

Between 1888 and World War I, electric street railways and interurbans were installed in most American cities. To stimulate business the line was often extended to a popular beach or picnic ground. If none existed, the company often built its own "trolley park" —plenty of grass for picnics, boats for lovers, a bandstand. With the trolley line providing electricity and customers, a merry-go-round was probably the first of many "rides" that were almost certain to be added to the park.

Electricity was still quite a novelty, and the public was entranced as the merry-go-round went round and round and hundreds of light bulbs flashed in mirrors, turning a ride into a fantasy. As the crowds grew, the parks grew. New thrills were added and old ones were traded for bigger and fancier ones.

Some of today's most successful parks hark back to the trolley. In Pennsylvania, the Allentown-Kutztown Traction Company took pleasure-seekers out to

Dorney Park. The Monongahela Street Railways Company dropped them at Kennywood Park near Pittsburgh. Between Ogden and Salt Lake City, Utah, the Bamberger Interurban let picnickers off at Lagoon.

This grand era of parks and merry-go-rounds came to an abrupt end with the Depression. By then many of the street railways had closed and amusement parks that survived on their own couldn't afford new equipment. By the time the market opened up again after World War II, carving wooden merry-go-round horses was no longer profitable. Cast aluminum ones took their place.

In the great days, which this article illustrates, there were four main centers of merry-go-round making—in Kansas, and in Philadelphia, Brooklyn and North Tonawanda, New York. C.W. Parker in the Midwest and Armitage-Herschell (later Herschell-Spillman, still later Allan Herschell) in upstate New York competed with C.W.F. Dare of Brooklyn for the market for portable merry-go-rounds. In the Germantown section of Philadelphia, Dentzel and the Philadelphia Toboggan Company produced many of the large machines for the new trolley parks of the Midwest and South. Northeastern coastal resorts tended to get their big machines from the many carving shops around Coney Island, such as M.C. Illions, Stein & Goldstein and George Carmel. Illions, Stein and Goldstein carved for W.F. Mangels Company, then went on their own. Carmel's horses are found on merry-go-rounds built by a number of small makers.

Some wonderful creations emerged from the carving shops. Each horse was given its own personality: The lead horse might be decorated with flowers as though it had just won the Kentucky Derby; an armored horse might carry a mace and shield. Frederic Remington's paintings or Teddy Roosevelt's Rough Riders must have inspired some of the cowboy and Indian horses.

Elaborate chariot by Philadelphia Toboggan was carved in 1920s for Elitch's Gardens, Denver.

Armored horse was made by Allan Herschell Company c. 1922. It's at Wisconsin Dells.

Horse from relatively new machine by Illions (c. 1926), now in California.

Two of Carmel's wild horses whirl
at Grand Strand Park, Myrtle Beach, S.C.

Many have a wild look in their eyes, their manes fly, their teeth are bared, they are straining to go.

Beside some American stallions, European carrousel horses look like sweet little park ponies. And "stallions," incidentally, is right. One carver reportedly delivered leering, well-endowed horses to customers he wished to embarrass. Hunting and military insignia went with them: a rabbit or bird hanging from a saddle; a canteen with "U.S." emblazoned on it.

Carvers soon started outdoing each other with medieval trappings, mythology, the commonplace and the absurd. A tiger skin complete with head became a saddle, a decorative bedroll had fruit flowing out of it, or a disembodied head replaced the bedroll altogether. On the chariots, bathing beauties and mermaids sometimes romped. Columbia was particularly popular during World War I.

Animals of all descriptions, imaginary or real, were mixed among the horses. Still, children mostly preferred the latter over pigs or dogs or giraffes or cats or hippocampi. Most of all they loved the dappled gray.

Smithsonian's collection on display

Several years ago, the Smithsonian Institution bought a fine Dentzel merry-go-round dating from the 1910s. A few of the figures have been restored and are on exhibit at the National Museum of History and Technology. Also on display is the Eleanor and Mabel Van Alstyne Folk Art Collection, assembled by these Van Alstyne sisters over the course of 40 years. Some of their animal figures are shown on the next pages.

Though commonly treated as folk art, carrousel carvings do not qualify, in the true sense. Except for the early "flying horses," they were carved by skilled craftsmen on a commercial basis in small factories. Some men roughed out the bodies, others did finished carving on the legs and trappings. The head carver—the most skilled of all—carved the heads.

Some of the animal figures are individually charming, but they were made to be seen among 48 or 64 others, not alone. The right side is the outside on our counter-clockwise-turning machines. This side is deeply carved and jeweled. The inside is rather plain in comparison, the jewels stopping abruptly as they come around from the front. Just as the carvers lavished most of their attention on the right side of the horse, they did their finest carvings on those large, outside horses that are often stationary. They paid less attention to the smaller, inside jumpers that only come into view for a quick glimpse as the eccentrics move them up and down. What the makers ignored in certain details, they more than made up for with lights, music, movement and a delicious blend of romance and whimsy.

The Smithsonian collection of animal figures includes 19th-century hippocampus . . .

. . . also flowered lead horse, carved by Stein & Goldstein in the 1910s . . .

. . . and this splendid lion from Gustav Dentzel's shop, 1890s.

Elephant, goat and zebra, among carrousel animals by famous carvers, parade in Smithsonian Museum of History and Technology exhibit of American folk art.

By Joseph J. Trusso jr.

Big troubles for a tiny fish

A remarkable example of evolutionary specialization, Nevada's isolated Devils Hole pupfish may not last the summer

In an isolated and detached 40-acre piece of Death Valley National Monument there is a small, spring-fed pool of water, located 50 feet below the rim of a cleft inside a rock formation at the base of a mountain. Jutting out from one side of the pool just below the surface of the water is a rock shelf. On this shelf—and nowhere else in the world—the tiny Devils Hole pupfish *(Cyprinodon diabolis)* spawns and feeds.

It has "probably the most restricted environment of any animal in the world," according to the National Park Service.

The unusual angle of the opening to Devils Hole itself limits the amount of light reaching the water, and this in turn varies with the season. Algae are the support medium for the invertebrates that form the staple of the pupfish's diet and in winter, from mid-November to mid-February, algal production ceases. Accordingly, many of the fish die. A summer population that may reach 700 is usually reduced to around 200 individuals in winter.

Despite these restrictions they have been there for an estimated 20,000 years (an important evolutionary

The blue-flecked male *Cyprinodon diabolis* (top) and the less colorful female are seen in actual size.

Greatly enlarged (left), the male was photographed in a special tank at his rapidly dwindling natural home, Devils Hole.

phenomenon), but their chances of surviving even one more year are doubtful, says Dr. Robert Rush Miller, curator of Fishes at the University of Michigan. With Dr. Carl L. Hubbs of the Scripps Institution of Oceanography, he was instrumental in persuading the Park Service to include the Devils Hole area in Death Valley National Monument in 1952.

The trouble started in 1968 when extensive pumping of underground water for irrigation projects began in the Ash Meadows, Nevada, area. The local water table started to drop. During the next few years, several local streams and springs either disappeared or had their flows severely reduced. Spring Meadows, Inc., an agricultural concern and the chief user of water in Ash Meadows, continued drilling new wells and tapping new pools. In one incident in 1969, Jackrabbit Spring, which had been designated by the Bureau of Land Management as a refuge for one of the other endangered species of pupfish, was pumped dry and its entire fish population was eliminated. At Devils Hole, the water level continued to drop.

In late 1969 a group of scientists and conservationists met in California to assess the rare and endangered fish of the Death Valley System. One species of fish and one subspecies were already extinct, they noted, and one other seemed to be gone. Seven other fish—five of them pupfish including *diabolis*—were sufficiently threatened to receive high priority. Among the symposium's recommendations was that local pumping of underground waters be halted since it was believed that a drop of just a few feet in the water level would destroy the world's only population of *Cyprinodon diabolis*.

Despite this, not only did the pumping continue, but Spring Meadows, Inc. drilled a new well only 15 feet off the boundary of the 40-acre tract surrounding Devils Hole proper and only 900 feet from the Hole itself. A U.S. Geological Survey file indicates that any well inside a two-and-a-half mile radius of Devils Hole is likely to cause a drop in the water level of the Hole. Only after a lot of disagreeable publicity, and apparently some pressure from the Bureau of Land Management, did Spring Meadows, Inc. decide not to use the well. Nonetheless, there still were seven other wells

Photographs by Rulon I. Hancock

within a three-and-a-half mile radius of Devils Hole.

In May 1970, the Department of the Interior formed a Departmental Pupfish Task Force under the chairmanship of James T. McBroom, assistant director, Bureau of Sport Fisheries and Wildlife. Their first document recommended that water pumping operations in the area be restricted and further data secured so that long-term solutions could be found before the species was eradicated.

That summer, Dr. James Deacon of the University of Nevada at Las Vegas and Mr. Dale Lockard of the Nevada Department of Fish and Game constructed an artificial shelf using corrugated fiber glass and a wooden fiber-glass-coated frame. It was submerged and, later, artificial lights were installed above it to encourage algal growth. As a spawning and feeding area, the shelf has proved of only marginal value.

Later in the summer of 1970 the Task Force, realizing its need for solid scientifically gathered data to back its recommendations and any possible legal action, sought funds for a ground-water study of Ash Meadows. With help from the Secretary of the Interior's office of the budget, $50,000 —$10,000 from each of five different but involved Interior Department bureaus—was gathered to finance the study by the U.S. Geological Survey. Among other things, the study was to establish clearly the relationship of all underground waters in the area and develop a model to aid in predicting possible irrevocable action.

As concern for *diabolis* increased during the fall, there were new attempts to perpetuate the fish. On September 10 and October 21, 48 *diabolis* were "transplanted" to an artificial pool near Point of Rocks Spring, Nevada, and an isolated spring in Saline Valley, California.

In a letter to me dated November 13, 1970, Mr. McBroom indicated some problems with the state of Nevada. He said, "Spring Meadows, Inc., the primary user of ground water in the area, is cooperating in the [Ash Meadows hydrological] study." However, he went on, "The Department of the Interior is also taking every action possible to secure the cooperation of the State Water Engineer for the state of Nevada in declaring a moratorium on the drilling of wells in the Ash Meadows area pending completion of present water supply studies." One month later in another letter, Mr. McBroom wrote, "I have not received a reply to my request to the State Engineer in Nevada for a moratorium for the issuance of a ground-water pumping permit in Ash Meadows. We remain hopeful that this moratorium will be granted."

On December 16, 1970, the Nevada State Engineer issued a decision: "There are no water rights on Devils Hole. . . . It is my ruling . . . that the proposed applications would not adversely affect existing water rights. . . . I think that a moratorium . . . is certainly not in the public interest." The pumping continues and the water drops.

During the spring and early summer of 1971 the situation continued to deteriorate. The transplants to other areas failed. On August 5, 1971, 15 *Cyprinodon diabolis* were transferred to Steinhart Aquarium in San Francisco in hopes that they could be cultured in captivity. But that attempt failed, as have the many attempts of others.

The Devils Hole pupfish is in imminent danger of extinction. In the fall of 1971, Mr. McBroom outlined their position as "Bad. About 70 percent of the natural rock shelf is now exposed." The remaining hope at that time was that the Justice Department would honor an Interior Department request to seek an injunction against further pumping in Ash Meadows.

There were two notable efforts made in 1971 by the federal government. Senator Alan Cranston of California introduced a bill, S. 2141, to establish a Desert Pupfish National Monument. In addition to setting aside about 35,000 acres of desert, it would also provide for the acquisition of water sources and/or the protection of those currently being used by or affecting endangered pupfish. The bill has been sent to the Senate Committee on Interior and Insular Affairs. If this monument were established not only could *diabolis* be saved, but other endangered species of its family would also be protected. But there is little hope now for the bill's passage.

The second effort took place on August 31, 1971. On that day, two weeks after the U.S. Attorney had filed a complaint in the U.S. District Court, Las Vegas, seek-

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and is a contributor to several conservation journals in the United States and in Europe.

ing an injunction to halt the pumping of certain wells, an agreement was reached to the effect that Spring Meadows, Inc. would cease pumping from wells 4, 5, and 6 (these have the most effect on Devils Hole) for the remainder of 1971, and throughout all of calendar year 1972.

Interior's Pupfish Task Force was dissolved in October 1971. As of February 1972, the water in Devils Hole had not recovered to its usual winter level as expected and, since then, the water has continued to drop as continued pumping occurs in the rest of the Ash Meadows area by Cappaert Industries (formerly Spring Meadows, Inc.). By May there were less than 100 *diabolis* left. The completed U.S. Geological Survey's ground-water study clearly shows that all waters in the Ash Meadows area are interconnected, and later studies indicate that the natural platform will be dry probably as early as the end of this month.

At press time, some pupfish and some water from Devils Hole had been sent to an aquarist at Fresno State College and 11th-hour talks were underway between Cappaert and the Department of the Interior. If the talks failed, an injunction might be sought. Some observers hoped that Interior would ask the President to declare Devils Hole a national wildlife refuge, a move not requiring congressional action.

In the booklet, *Save the Pupfish,* conservationist Sterling Bunnell wrote, "If Charles Darwin had known of them, he would have been enthralled, for they are among the world's best examples of divergent evolution, as remarkable as the Galápagos finches which inspired him to form his theory of evolution." Certainly for this alone *diabolis* and its relatives should be carefully protected.

Neither special lighting to promote algae nor an artificial spawning shelf (below the lights) are saving the pupfish, while nearby pumps suck Devils Hole, its sole habitat, dry.

By Gary A. Soucie

Hope oozes up for saving Great Dismal Swamp

Timbered, drained, bombed and maligned, this hotbed of tall tales has lured the likes of George Washington and may yet be helped

Great Dismal Swamp. The mere mention of the name to a native of southeastern Virginia or northeastern North Carolina is almost sure to trigger an endless narrative of folktales, myths, histories and "true adventures," which are indented and enclosed in quotation marks throughout this article. One hears stories about renegade Indians, the Founding Fathers, runaway slaves, lost hunters, bootleggers who shoot on sight, poisonous snakes of prodigious size, witches that turn into trees and deer, man-eating bears, quicksand bogs, ghost canoes . . .

Indeed, historical facts about the Dismal Swamp are hard to confirm because of the romanticization that has intervened. No one knows just when the Great Dismal Swamp was discovered, or who discovered it. Certainly the Indians knew it well, judging by the arrowheads and stone axes that have been found in the swamp. Situated between the first two English colonies—Fort Raleigh (1585) and Jamestown (1607)—chances are its existence was known by the earliest settlers in the Virginia Colony. Lake Drummond in its center apparently was discovered and named prior to 1676. Now, after nearly 300 years, the lake is in trouble, along with the rest of the swamp, and there are state, local and private efforts being made to save it.

Dismal Swamp's continuous human history, and its

A noted conservationist and occasional North Carolinian, Gary Soucie was formerly executive director of Friends of the Earth.

Whoever named it the Great Dismal Swamp may well have seen it first on a foggy, rainy morning such as this along the Feeder Ditch.

Photographs by Jack McCauley

Roger de Rageot lunges for a water snake:
The swamp is "an excellent place for reptiles."

troubles, began back in 1728 when crusty old Colonel William Byrd II surveyed the state line through its center. Some say Byrd gave the swamp its name, and, whether he did or not, he certainly would have approved of the epithet. In accounts of his survey, Byrd describes the swamp as an awesome and terrible place: "The Dismal is a very large swamp or bogg . . . horrible desart . . . the foul Damps ascend without ceasing, corrupt the Air, and render it unfit for Respiration. . . . Nor indeed do any birds care to fly over it . . . for fear of the noisome exhalations that rise from this vast body of dirt and nastiness. . . . Never was Rum, that cordial of Life, found more necessary than in this Dirty Place."

Byrd's harsh judgment and the ominous name have lived to haunt the swamp's defenders and protectors. Some say Byrd never set foot in the place. Professor John T. Baldwin jr. of the College of William and Mary calls Byrd "a liar," going on to say, "He was just trying to make the swamp look worse than it really was so he could get more money out of England for the surveying."

Not all early visitors shared Byrd's aversion to the swamp. George Washington made at least two visits in 1763 and described it in letters as a "glorious paradise" for wildlife. Washington suggested draining it and digging a canal through its length to connect Elizabeth City, North Carolina, and Norfolk, Virginia.

In 1969, vacationing on the nearby Currituck banks, I made a halfhearted effort to visit Dismal Swamp but it didn't work out.

> "There's so many snakes in that swamp there ain't anybody going to take you in there during the summer. They've got more cottonmouth moccasins in there than anywhere, and copperheads and rattlers upwards of eight foot, too. No sir, you can't go into Dismal Swamp in the summer."

Last January, photographer Jack McCauley and I decided to make a brief reconnaissance trip. Instead of open marshes, cypress ponds and brushy bogs, we were confronted by a dense forest of pines, white cedar and hardwoods, a Chinese puzzle of vines, a heavy understory of shrubs and ferns, and a very soggy, springy floor of deep peat.

The Great Dismal is not a shallow, poorly drained catch basin, like most swamps. It is a gently sloping hillside, drained outward from its center by seven streams and more than a hundred canals and ditches. While the absence or scarcity of peat is usually a good swamp indicator, in the Great Dismal the peat beds reach depths of 8 to 13 feet; bacterial decay is inhibited and peat formation stimulated by the acidity of the waters. The deep peaty soil holds water well, producing the conditions for the palustrine forest cover characteristic of swamps a great deal marshier.

Everywhere we found evidence of logging: huge juniper (southern white cedar) stumps cut long ago, timber slash, old plank roads, rusting equipment, even recent preparations for future logging.

We made a second visit in April. All the snake stories we had read and heard had begun to weigh heavily in our planning. Most of the stories are exaggerated, but it is true there are large numbers of cottonmouth moccasins, copperheads, canebrake and pygmy rattlesnakes and, according to some, coral snakes and diamondback rattlers.

Thinking we might as well get our first snake encounter under our belts, we spent the first day canoeing around the Gum Swamp with herpetologist Roger H. de Rageot. Gum Swamp is a discontinuous part of the Dismal Swamp now separated from its main body by several miles of residential, agricultural and industrial development. It is, according to Rageot, "an excellent place for reptiles. On a good day I have seen

Alvah Duke navigates the Feeder Ditch toward Lake Drummond's "clinically sterile" waters.

Cypress knees haunt Lake Drummond, providing homes for birds and a source for legends.

as many as a hundred cottonmouth moccasins there."

It wasn't a good day. It was sunny, but a chill wind was blowing. We didn't see a single cottonmouth, but the slight, soft-spoken Frenchman dazzled us repeatedly with his seemingly reckless lunges over the gunwales into brier thickets after brown, banded and red-bellied water snakes.

During ten days there we didn't see a venomous snake. Except for birds we didn't see much wildlife at all, though we saw plenty of tracks and other signs of bear, deer, otter, flying squirrels, raccoons, nutria and muskrats. No sign of bobcats, but apparently there are plenty of them in the swamp. Bird life was quite rich, though more in terms of species than individuals.

An article on birds of the Dismal Swamp published in 1969 in *The Virginia Journal of Science* estimates there are 65 to 75 nesting species and "an indefinite number of migrants and winter visitors," concluding with a list of 67 birds sighted by the author. We did not see all the birds on his list, but we saw 22 species that were not on it. Bald eagles have probably disappeared, but we did see ospreys, a lot of hawks and a barred owl.

Surprisingly, we heard a great many more bear stories than snake stories from the hunters, fishermen and guides we met in the swamp.

> "These two ol' boys were out huntin' one day and they come upon a small bear across the ditch. The one raised his gun and the other says, 'Don't kill 'im. Don't kill 'im. Let me cross over to catch 'im.' 'All right,' he said. So he crossed over the ditch and started rasslin' him. That little ol' bear was clawin' and bitin' and growlin' just fierce as you please and pretty soon this boy calls out to the other, 'Shoot 'im! Shoot 'im!' 'I can't,' he says, 'I might hit you.' 'Well, shoot one of us,' the other boy says, 'cause I can't take no more of this!"

The Great Dismal Swamp once covered 2,200 square miles, all the way from the Elizabeth River on the north to Albemarle Sound on the south, from the Suffolk Scarp on the west to where it finally gave out on the sandy, grassy plains near the Atlantic Ocean. Today, depending on one's definition, Dismal Swamp covers 250 to 450 square miles, although some claim as many as 750 square miles for it. All that remains is in private ownership (including large land and lumber corporations) except for the waters of Lake Drummond and the 300-foot-wide strips through which the Dismal Swamp Canal and Feeder Ditch run.

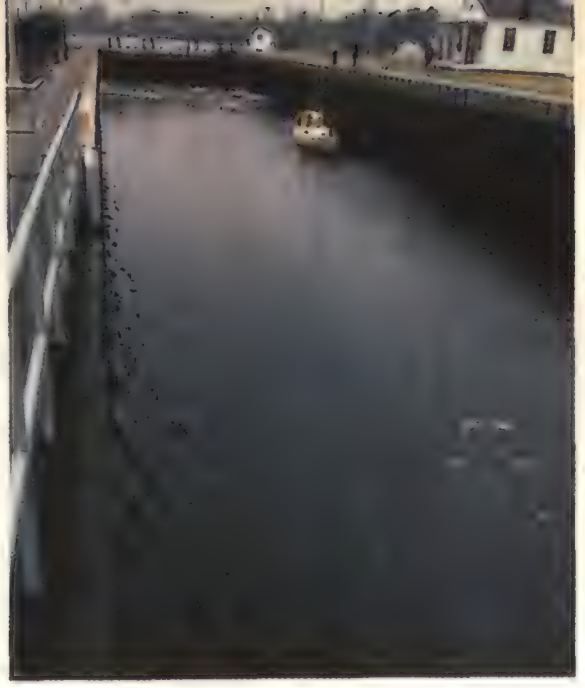
Proposed by Byrd in 1728 and by Washington in 1763, the Dismal Swamp Canal was not begun until 1793, having been authorized six years earlier by the Virginia legislature at the urging of Governor Patrick Henry, himself a Dismal Swamp landowner. Opened first to small flat boats bearing cedar shingles and barrel staves in 1805, the canal has been deepened and widened several times since.

Purchased by the United States in 1929, the Dismal Swamp Canal is now operated by the U.S. Corps of Engineers as part of the Intracoastal Waterway. Water for the canal comes from Lake Drummond via the three-mile-long Feeder Ditch. A boat locking through both ends drains between one and two million gallons of water out of the lake (some say more), and some people claim that a canoe carrying two people once was locked through alone.

Alvah Duke, a Dismal Swamp zealot, "historian and guide" and chairman of the Wilderness Society of Virginia's Dismal Swamp Committee, operates his Lake Drummond Boat Tours out of two house trailers parked at Arbuckle's Landing, where the Feeder Ditch joins the canal. We traveled with Alvah up the Feeder Ditch—once described as a green tunnel but recently denuded of bankside trees by the Corps—to Lake

Wild jasmine gives the swamp an undismal flash of spring color.

Regeneration: A loblolly pine grows from water-logged cypress knee.



It takes up to two million gallons to flush a small boat through canal.

Drummond. As we passed by the Londonbridge oyster reef through which the Feeder Ditch is cut, Alvah shouted over the outboard engine: "See those oyster shells? Six-thousand-years old." And then, with that special Alvah Duke touch, "Older than the pyramids."

Because the opening of the larger Albemarle-Chesapeake Canal has diverted all but small pleasure-boat traffic away from the Dismal Swamp Canal, the General Accounting Office and the Corps would like to hand over its operation to local jurisdictions. It cannot be closed since that would result in periodic flooding of agricultural lands, highways and residential areas. At the same time other interests have urged enlarging the canal and industrializing the whole area, calling their vision the "Ruhr of America."

Out in Lake Drummond, Alvah is really at his best, relating facts and spinning yarns at a machine-gun clip, pointing out the gnarled old cypress the Indians said had once been a deer, urging you to try the sweet-tasting, "clinically sterile" juniper water, pointing out where the barn swallows and chimney swifts nest in the cypress roots, recalling the legend of the Lady of the Lake, a long-deceased Indian maiden who shows up every now and then in a ghostly canoe.

> "During the Second War the military used Lake Drummond as a high-altitude bombing target, but they missed the lake so often and started so many peat fires they had to quit. The smoke drifted over onto the beach and they were afraid the German submarines could sneak in past the Coast Guard stations."

Lake Drummond was discovered by William Drummond, an early royal governor in Carolina (1663-67), during a hunting trip on which his three companions perished. The lake is about two-and-a-half miles in diameter (3,142 acres) and only six feet deep, so it can get choppy in a hurry whenever there is a wind. It is one of the highest places in the Dismal Swamp, except for the land immediately west of it which slopes down to it gently from the base of the Suffolk Scarp. Its water level fluctuates wildly, depending on the rainfall and the traffic through the locks at Deep Creek and South Mills, so it has no real shoreline.

The waters of Lake Drummond and the Great Dismal Swamp have been much prized for centuries. Juniper water—coffee-colored in the lake and canals but orange to chrome yellow in a glass—is sweet tasting and will keep fresh for a long time. Thus it was a favorite of sailors on long sea voyages; it was supposed to have been carried by Admiral Perry on his "open door" trip to Japan in 1852-54. During the Civil War, Union soldiers made several raids into the swamp for water. Alvah Duke once suggested to NASA that it be used on space flights.

> "The Dismal Swamp bootleggers had one thing going for them: The water was already the right color; all they had to do was add the spirits."

Juniper water is produced by the leaching of water through the rich brown peat and from the roots and bark of gum, cypress, maple and cedar trees. Two other dark swamp waters are found in the swamp: gum water, dark as Coca-Cola and considered "not too wholesome," and cypress water, the color of strong tea and midway in palatability between the others.

A couple of miles south of Arbuckle's Landing we tried to find the site of the old Lake Drummond Hotel, better known as Half Way House, that enjoyed great popularity and notoriety in the mid-1800s. If any remains exist they must be buried under the spoil bank deposited from more recent dredging of the canal. Straddling the state line on the east bank of the Dismal Swamp Canal, it was popular with duelists and with Norfolk sailors and young Virginia girls fleeing to North Carolina's more lenient marriage laws. It was offered for sale in 1830 in a Norfolk paper this way:

This establishment (being situated on the N.C.-

A logging train rattles down one of many small timber roads.

Straining to chase game: a hunter's kennel deep in the swamp.

Devil's-walking-stick is one of the swamp's less known hazards.

> Va. line, one half the building in each state) is in a superior degree calculated to render facilities for matrimonial and duelistical engagements; and should the purchaser become a magistrate, the facilities would be much increased though rather detrimental in the latter.

We first entered George Washington's part of the swamp, in the northwestern quadrant, with Dr. Gerald F. Levy, a botanist at Old Dominion University, and Susan Walker, one of his graduate students, who are doing soil moisture research in the swamp. According to Dr. Levy, parts of Dismal Swamp are much drier now than they were in the past and are apparently still drying out, thanks to all the canals and ditches carving up the swamp. The cypress, gum, pine and juniper are losing ground to holly, maple, beech and other hardwoods. The canals and ditches typically expose two to three vertical feet of bank, but in many places you can find plenty of evidence that the water table was once at or very near the surface.

Apparently the spirit of the Corps of Engineers antedates even the Spirit of '76, for after visiting the swamp in 1763 Washington and his associates formed the "Adventurers for Draining Dismal Swamp," and later the Dismal Swamp Land Company. Having acquired 40,000 acres, the entrepreneurs tried to drain the swamp for agriculture. Washington supervised the surveying of the first long canal in the swamp, to this day called Washington Ditch.

> "They tell me a man over to Suffolk's got a shovel that was used by Washington's men in digging the Washington and Jericho Ditches. It's probably had a new handle onto it, though, and some say a new blade, too."

Washington's agricultural venture failed because of the high cost of slave labor and the unsuitability of peaty soils for most crops, so Dismal Swamp Land Company went into the lumber and shingle business, their drainage ditches being used to float juniper logs out to mills in Suffolk.

Washington's former forest holdings are now owned, as is most of the swamp, by a timber company. Some of the logged-over lands have been completely cleared for agriculture and of course much of what used to be Dismal Swamp is now farmland. Most of the present logging is being done in the Carolina part, rather primitive operations using narrow-gauge railroads laid on juniper logs to carry the wood out. East of Corapeake, North Carolina, on lands owned by Morrison Quirk, Atlantic Forest Products Company's local sawmill is cutting juniper logs which, we were told, are sold as fencing.

More damaging than the logging has been the drainage of the ditches and canals dug for agricultural drainage, log floating, navigation, log roads, fire roads and firebreaks. As the swamp's drying out increased the fire hazard—a 1923 fire consumed more than 150 square miles of forest and burned as much as six feet into the peat during the two years it smoldered—more canals were dug as firebreaks and to provide the spoil for construction of fire roads.

Union Camp Corporation owns 49,213 acres of Dismal Swamp, about half of the Virginia swamp, including the bottom and fluctuating shoreline of Lake Drummond. Having acquired the land from Dismal Swamp Land Company at the turn of the century, Union Camp's predecessor, Camp Manufacturing Company, carried on extensive logging operations between 1925 and 1947. Since that time there has been no substantial timber cutting on Union Camp property. Maintenance of the extensive road network and fire control are costly, especially when balanced against 25 years without a harvest. The company's mill at Franklin is the largest free-sheet bleached paper mill in the world, and Union Camp's pulpwood rotational cycle is 35 years.

Union Camp leases its lands to hunt clubs at 20 cents an acre and leases cabin sites on the lake at $25 annually. The hunters help with policing the area, maintaining the roads and fighting fires. This pattern is repeated throughout the swamp's timberlands.

Deer and bear are the hunters' main targets, although much of the Carolina swamp is a bear refuge and by next year bear will be protected throughout the Carolina swamp. Dogs are used to run the quarry out onto the roads or the few open areas. Up on the Portsmouth Ditch, on Atlantic Farms property, we saw 75 hunting dogs in kennels: bird dogs, Walker hounds for deer and half-breed "potlickers" for bear.

> "Costs me several hundred dollars a year to feed 'em, but one run and it's worth it. That's some kind of music! I don't care about killin' no deer; I just love to hear the dogs. Sometimes I'll take a truckload out, and when they're gone, I'll go back and get another truckload."

The Cold Water Ditch area in North Carolina is generally considered to be the wildest part of the swamp. We had a hard time finding anyone who could direct us to it. Like the rest of the swamp it is cut through with roads and canals. And the wildest part of it is the vines, the same ones we found all over the swamp—greenbrier, campsis, poison ivy, honeysuckle, swamp blackberry, rattan vine, yellow jasmine, brierberry, wax myrtle and the snakelike *Bartramia*—but in greater abundance and even less penetrable. And thicker stands of *Aralia spinosa,* a lethal-looking thorny plant called Hercules' club, devil's-walking-stick or prickly ash.

Just north of the Cold Water Ditch area is a 14,000-acre trapezoidal area proposed as a state park. We toured the park area in a party that included a hunter named Charlie Weeks and Dr. Joseph A. Gill of Elizabeth City—physician, member of the Board of Conservation and Development and "the prime mover and strongest supporter" of the park project, according to the superintendent of state parks.

When he spotted the compass hanging about my neck, Charlie told us how to find the way out of the swamp: "Take a straight stick, put it to your shoulder and follow it. Now, don't get you no curved stick, or you'll never get out!"

The site selected for the state park is one of those rare ones with obvious places for visitor development and access without destroying the values the park is supposed to save. Estimated cost is nearly two million dollars, but the state has already executed agreements with the owners to sell for approximately $142 an acre and has begun appropriating money—$200,000 in the last legislature.

By contrast, the state of Virginia proposed a wildlife management area of 50,000 acres in their part of the swamp at a cost of $1,250,000. Since then the Virginia proposal has been scaled down to 20,000 acres.

At the invitation of local conservation groups, the League of Women Voters of Virginia and Governor Robert W. Scott of North Carolina, the Nature Conservancy is looking into lending a hand in preserving portions of the Great Dismal Swamp.

A sad case of swamp abuse

In addition, the four U.S. Senators from the two states and Congressman Watkins M. Abbitt of Virginia have introduced bills that would authorize the Secretary of the Interior to make a one-year study "to determine the best and most feasible means of protecting and preserving the Great Dismal Swamp and the Dismal Swamp Canal."

The Great Dismal Swamp has taken a lot of abuse over the centuries, from Byrd's slander to Washington's onslaught to heavy logging and widespread peat fires. It has outlived schemes to build industrial areas, jetports, housing developments, stock car tracks, dog and horse racing tracks. It has survived nudist colonies, sulfur spring spas, Jesus-people crash pads and bootleg stills in its midst. But in every case it has given ground, its area shrunken, its wildlife populations diminished and its character changed.

And as Alvah Duke so aptly, if floridly, puts it, "Once destroyed, all the remorseful tears, all the pillars of gold, and all the puny efforts of man can NEVER re-create, imitate, or replace the magnificence of the GREAT DISMAL."

Jarvis Williams loads junipers near Corapeake. Logging may cease if conservationists have their way.

BELOIT

"I see myself as a little boy, pushing a wheelbarrow full of wild carrots through tall grasses . . . in the fields and villages of the Ile-de-France, always within sight of a church steeple. . . ."

French villagers of Hénonville include six-year-old Dubos, fourth from right. A Pulitzer prizewinner, he is professor emeritus at Rockefeller University.

by René Dubos

We are all shaped by environment, people and nations

This adaptation of a chapter from the author's forthcoming book traces the elements that build Man's character and his universality

When I summon to memory experiences from my distant past, the images that emerge bring back to life the places in which I functioned. I see myself as a little boy, pushing a wheelbarrow full of wild carrots through tall grasses and along quiet streets in the fields and villages of the Ile-de-France, always within sight of a church steeple; my adolescent daydreams of adventure are associated with the parks of Paris and the rocky shores of the Riviera; I think of myself as a young adult reading scientific books on the Pincio in Rome, then among trees and lawns in the Hudson River Valley or working long hours in New York and Boston laboratories.

In daily life persons are usually more important than places. Like other human beings, I, too, have depended at every stage of life, and continue to depend, upon countless men and women. Yet I am always prejudiced in favor of those who believe that

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Eroticism of India: "hips and breasts, agile limbs . . . with intricate design."

landscapes profoundly affect human development.

In real life as well as in literature, persons exist as functions of the place in which they live. The Russian psychologist A.R. Luria, in his book *The Mind of a Mnemonist,* describes a patient with a phenomenal, retentive memory, who remembered figures, words or sentences not as abstract symbols but only in close associations with specific places and life experiences. He could make his pulse race just by imagining himself running to catch a train. In the memory of this person, words and figures were always linked to visual and other sensual perceptions. As pointed out by Dr. Luria, his patient's mind was retentive, because it was *speculative* in the etymological sense of the word: It functioned chiefly through visual images.

In the course of our daily life, we constantly respond to buildings, landscapes, trees, clouds, stars and other elements of our nonhuman universe. The openness of vast plains or seashores makes the body and the mind different from what they would have become in the subdued light of forest clearings or mountain valleys. A person born and raised in Florence cannot help being conditioned by churches, palaces and parks, their sights, sounds and smells. Even if the Florentine is not consciously aware of these experiences they become, nevertheless, part of his being and make him lastingly different from what he would have become in London, Paris, Barcelona or New York.

Granted the importance of heredity in all aspects of human life, it would seem that social forces, environmental conditions and historical accidents have played an even greater role in historical events. Even the differences between prehistoric herdsmen and peasants may have been due more to social than to genetic factors.

The primitive hunter necessarily saw himself as part of his natural surroundings, and usually placed the community decision over his own self-interest. The Caughnawaga Mohawks, for example, regarded hunting and war as the most highly valued male activities, had little hierarchical organization and elected a leader only for their hunting parties. After those Mohawks had been forced to settle on a reservation south of Montreal, it was accidentally discovered that they had the skills required for work at great heights on skyscrapers. Although they are now extensively engaged in this specialized kind of construction work, they have retained many of their ancient ways of life. When they go to the city on a construction job, they choose a leader as their forefathers did for a hunting party; then many return to the reservation when the job is completed, just as their ancestors did after a long hunt.

Human behavior would be a chaos of pointless acts and exploding emotions if it were not that even the most fundamental aspects of life are shaped by culture. Food habits range all the way from pure vegetarianism in certain African tribes to the almost complete absence of vegetables and fruits in the Eskimo diet. As to sexual habits, Gary Snyder has described the eroticism of Greece as "nakedness in full blast of sunlight," the eroticism of India as "hips and breasts, agile limbs on stone floors with intricate design." Landscapes and climates have effects on behavior which transcend matters of comfort and health. Sanitation may be deplorable in Greece and plumbing defective in the

south of France, but this counts for little when compared with the fact that the scenery, the skies and the waters of the Mediterranean world engender tastes and attitudes which persist through life.

The resistance to change of social entities probably accounts for the origin and continued existence of nations. Geology, topography and climate differ from one region to another to such an extent that physical factors cannot possibly explain national characteristics, except in the case of very small nations. What is certain is that so-called blood relationships are biologically meaningless and historically nonexistent. A Jew, appropriately named Disraeli, symbolized Victorian England, and the second president of the Third French Republic was named MacMahon!

Common sense leaves no doubt that a distinctive array of intellectual and behavioral attributes is associated with the adjectives American, British, French, German, Greek, Italian or Spanish, even more than with the adjectives Nordic and Mediterranean. Likewise Chinese and Japanese denote attitudes that have remained different for many centuries. Nations do not exist as geological, climatic or racial entities, but as human experiences. The American social critic Max Lerner was not entirely facetious when he defined the use of the two words *permitted* and *forbidden* in different European countries. "In England, everything that's not especially forbidden is permitted; in Germany, everything that's not especially permitted is forbidden; in France, everything is permitted, even including that which is forbidden; and in Russia, everything is forbidden, including that which is permitted."

Modern historical knowledge has confirmed that groups of people whom circumstances force to live together in a certain place tend to develop a body of shared ideas, values and beliefs, which progressively becomes their ideal and guide. The culture they develop constitutes a whole which shapes itself as a continuously evolving national spirit. Order evolves spontaneously. In this light, national characteristics are expressions of human choices based on the collective acceptance of certain conventions and traditions—and, perhaps, especially of myths.

In his essay, "The English People," George Orwell asserted, "Myths which are believed in tend to become true, because they set up a type, or 'persona,' which the average person will do his best to resemble." For ex-

Mohawks build a skyscraper: "They choose a leader as their forefathers did for a hunting party."

Immigrants at Ellis Island: The continent "overwhelmed them by its sheer size, its . . . extremes."

ample, the behavior of the British population during World War II "was partly due to the existence of the national 'persona'—that is, their preconceived idea of themselves."

It is remarkable that some national characteristics last for centuries despite social revolutions and foreign conquest. It has been said that the German and British characters are much the same today as when Tacitus first described them 2,000 years ago. Descriptions of American life written by European travelers since the 17th century richly illustrate that certain behavioral traits which are now regarded as characteristic of 20th-century United States were already apparent during the Colonial period, and were fully established from the beginning of industrialization.

William Chambers was a journalist who visited the United States in 1854 and reported his impressions in the Chambers' *Edinburgh Journal.* He had been interested by what he had seen, but like countless European visitors before and after him, he noted with scorn the hurry and bustle everywhere, the casual readiness to greet and accost, and the goblet with ice placed before every diner, whether he wanted it or not. He was amused by the homage accorded to women who seemed to be elevated to the rank of divinities; but he was shocked by the rubbish on Broadway and also criticized the fact that no one walked who could afford to drive around in a carriage.

Very early, foreign travelers detected in America an optimistic mood very different from the skepticism and even despair in which many Europeans had been bred. Saint Jean de Crèvecoeur, a Frenchman who had settled in the state of New York, related the typical optimistic attitude when he quoted in 1801 a European settler: The "wild and savage" country would be completely transformed within ten years. "Our humble log houses will be replaced by fine dwellings. Our fields will be fenced in, and the stumps will have disappeared."

What Crèvecoeur could not have foreseen was that the desire for change would continue to dominate American life even after the wilderness had been subdued. "The Americans *love* their country, indeed, *not as it is,* but *as it will be,*" a traveler noted in the 1830s. "They do not love the land of their fathers; but they are sincerely attached to that which their children are destined to inherit." This attitude is a far cry from the delight in the particular place and the particular moment symbolized by the Mandarin tea ceremonial and expressed in Matisse's paintings.

The tendency to think of the present as a springboard from which to jump into the future, rather than

to be enjoyed, has been a weakness of American life. One of its consequences has been a tendency to neglect the immediate surroundings and to be concerned with distant goals rather than direct experiences, with process rather than with product, as if today were not worth living.

The impoverishment of life resulting from the sacrifice of perceptions to action was recognized at the very beginning of the 19th century by Daniel Drake, the first Midwestern physician to achieve national stature. In a series of essays and books beginning in 1810, Daniel Drake described his impressions of American life in southern Ohio, Kentucky and the Middle West.

"We are a migrating but not a traveling people. We think of our country only as abounding in residences; and pass from one to another (see p. 67), without inspecting anything between them. Thus, even migration bestows on us none of the benefits of travel. In our transits, all things are sacrificed to speed. We are not satisfied unless we add night to day; and when we awake in the morning, congratulate ourselves that we are a hundred miles nearer the point of attraction; although we have passed through scenes and objects the most interesting, without having beheld the least or the greatest of them. Thus while we are wanderers, we remain ignorant of the relations and true character of all among which we roam; or know them only in connexion with hemp or cotton planting, commerce, land speculation or the practice of law and medicine."

Dismay of early immigrants

Emerson once stated that "the views of nature held by any people determine all their institutions," and this statement is also true when reversed because the ways of life always influence attitudes toward nature. In the imagination of 18th-century Europeans, the New World was a pastoral paradise, gentle in climate and with picturesque but amenable sceneries—the land of the good, healthy and happy savage described by the early explorers of the South. What the immigrants experienced, however, was a dismay and fear on their first encounter with their new country. The American continent overwhelmed them by its sheer size, its geographical and climatic extremes. The creation of an environment better adapted to the European ways of life was the first task of the immigrants. American civilization has been torn ever since by the contradiction between pastoral myth and technological fact. Even now most Americans believe, as did their predecessors, that they must "conquer" nature rather than adapt themselves to the natural environment; they tend to put their faith in machines and technological fixes rather than in the complexities of ecological systems and in the slow processes of nature. This conquering attitude, which has dominated Man's relationship to nature from the beginning of American history has contributed to material progress and to the technological and economic supremacy of the United States, but it has also been responsible for enormous damage to the environment.

North Americans have always tended to assume that the world was beginning afresh with them. Belief in the goodness of Man and in the possibility of re-creating heaven on Earth was at the core of their philosophy, just as belief in a kind of superiority inherited from the Latin genius has long been a French credo. Americans developed early a deep concern for the common man, and confidence that he could be trusted to set things right in time and to use wisely the enor-

"Young people are now trying to disengage . . .
from the type of life created . . . during the past century."

mous resources of the unspoiled continent. This confidence was the basis of Jefferson's belief in "the unquestionable republicanism of the American people" which was eventually idealized in Lincoln's government of the people, by the people and for the people.

Trust in the perfectibility of human life (rather than of Man himself) is a leitmotiv of American literature. Walt Whitman believed that it was the grand mission of America to create the land of healthy and free men. For Thomas Wolfe, "The essence of all faith for people of my belief is that man's life can be, and will be, better." This euphoric attitude prevailed even among the sharpest critics of American civilization. Sinclair Lewis was a typical American reformer at heart who shared the vision of his hero Cass Timberlane that America would become the "fabulous great land of the year 2000 A.D." It would be "a new Athens, stark and clean, a new land for a new kind of people."

This belief has recently found a new expression in the concern for environmental quality, so typical of the American tradition in its missionary spirit and in its faith that, without abandoning any technological advantage, men can return the environment to its pristine state or *reform* it according to their ideals.

All over the world, countless young people are now trying to disengage themselves from the type of life created by Western civilization during the past century. The new rebels are concerned with living in the *now* rather than with anticipations of the future. At its best, the present counter-culture represents values which are universal, yet many of its expressions have characteristics which are distinctively national. The dreamy attitudes of the mid-20th century *Wandervogel* in Germany are strangely reminiscent of 19th-century German romanticism; the white bicycles of the Amsterdam *Provo's* have the sensible, practical quality of Dutch life; the barricades thrown up by the rebellious French students in 1968 seem to be later models of those erected by the Paris bourgeois revolutionaries in 1830 and 1848. The youth movement of the 1960s in the United States calls to mind a modernized Wild West life-style with glamorized motorcycles instead of richly caparisoned horses, and pot instead of firewater.

The universality of Mankind expresses itself in the rich diversity of persons and cultures because each member of the human species incarnates the genius of the place in which he develops. This trend toward diversification may appear objectionable because it seems to go counter to the ideal of unity—symbolized by the phrase "one world." Yet I believe that the emotional attachment to our prized diversity need not interfere with the rational loyalty that we must develop to our planet as a whole. We can hardly feel at home on Earth if we do not continue to love and cultivate our own garden.

"In our transits, all things are sacrificed to speed. . . We
have passed through scenes . . . most interesting,
without having beheld the least or the greatest of them."

Smithsonian

Index *

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Book reviews

The Children of Pride
Edited by Robert Manson Myers
(Yale University Press, $19.95)

This important book is a compilation of letters and journal entries written mostly by members of a Georgia family between 1854 and 1868. These are flanked by a prologue and epilogue by University of Maryland English Professor Robert Myers, who is also an editor, writer and scholar of recognized excellence. A 289-page family Who's Who and an integrated index of the Free and the Slaves add to the volume's considerable poundage and provide a means to sort the people who were forever visiting around and being named after one another.

Dr. Charles Colcock Jones, slaveholding Presbyterian minister and owner of three plantations, is head of the letter-writing family. He is married to a first cousin, Mary Jones. Their three children are, respectively, Mary Sharpe, wife of the Reverend Robert Q. Mallard; Charles Colcock jr., a lawyer; Joseph, a doctor who, among other things, contributed scholarly medical papers to Smithsonian publications of a century ago.

With the expert weaving of Professor Myers, letters and journal entries become a tapestry of the human condition, with its eternal grace and self-delusion.

Myers begins his book sufficiently ahead of the outbreak of the Civil War to give us a day-by-day picture of the family before the holocaust. But any random selection from these 1,445 pages shows men and women who savor the earth and their own particular lives.

The first fall fires of Arcadia, the family's offshore plantation, are lit by the slaves and shed cheerful rays around the parlor, while the rude northeast wind dashes watery gusts against the windows. Kittens stow themselves in an open umbrella. Rain drips on the eaves of the piazza. A turkey hen spreads her young ones around her and slowly picks along the green, while the gobbler struts with two or three idle dames in another direction. Sheep finish an early browse and lie down beneath the hickory tree. All around is a concert of birds.

One of the sons, young and on holiday, writes of country candles shining on a Kentucky table well furnished with young chickens, corn bread and fresh butter. In Savannah he dances at a "fancy party" with ladies dressed in court gowns of the era of Louis XIV. The voice of Mrs. Mary Jones, visiting in Marietta, Augusta, Lexington or Hot Springs, is heard telling other members of the family that the slaves should pick the geese and bag the feathers, card the wool and watch the moths in the carpets.

From the time the letters and journal entries begin, rumblings are heard offstage of the conflict to come. The Reverend Dr. Jones writes that the abolitionists are fanatics of the worst sort, and negotiates for the sale of a family of his own slaves. In November 1859, he notes that the abolition press, both secular and religious, in the free states has great sympathy for the prisoners at Harper's Ferry. He himself sees no place left for forbearance, no ground for compromise.

In the middle of the book, the rumbles offstage escalate toward violence. Jones writes to his lawyer son, Charles jr., then a Confederate Army officer, suggesting measures be found to suppress the escape of Negroes who are tempted by cheap goods, freedom and paid labor. He calls them traitors who may pilot the enemy into white bedchambers, for they know every road and swamp and creek and plantation. At the same time, Jones continues teaching the blacks religion. From Atlanta, his son-in-law, the Reverend Robert Mallard, writes that horses are appropriated right off ladies' carriages for General Braxton Bragg's Confederate troops. Mrs. Mary Mallard tells her father that "The gentlemen that have returned are full of the horrible scenes of the bat-

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Foreword by David Brower
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7. THE MIGHTY SIERRA
By Paul Webster
Foreword by Francis P. Farquhar
This word and picture portrait of the Sierra Nevada conveys a dramatic story of majestic peaks and incomparable valleys . . . of towering redwoods and tiny white-water creatures . . . of man's adventures in this mountain world, and nature's great events. The volume is crammed with factual information, a Guide to the Sierra for those who have yet to discover it, and is further enriched by hundreds of exciting photographs of the entire Sierra range. $13.95 Associate's price **$12.50**

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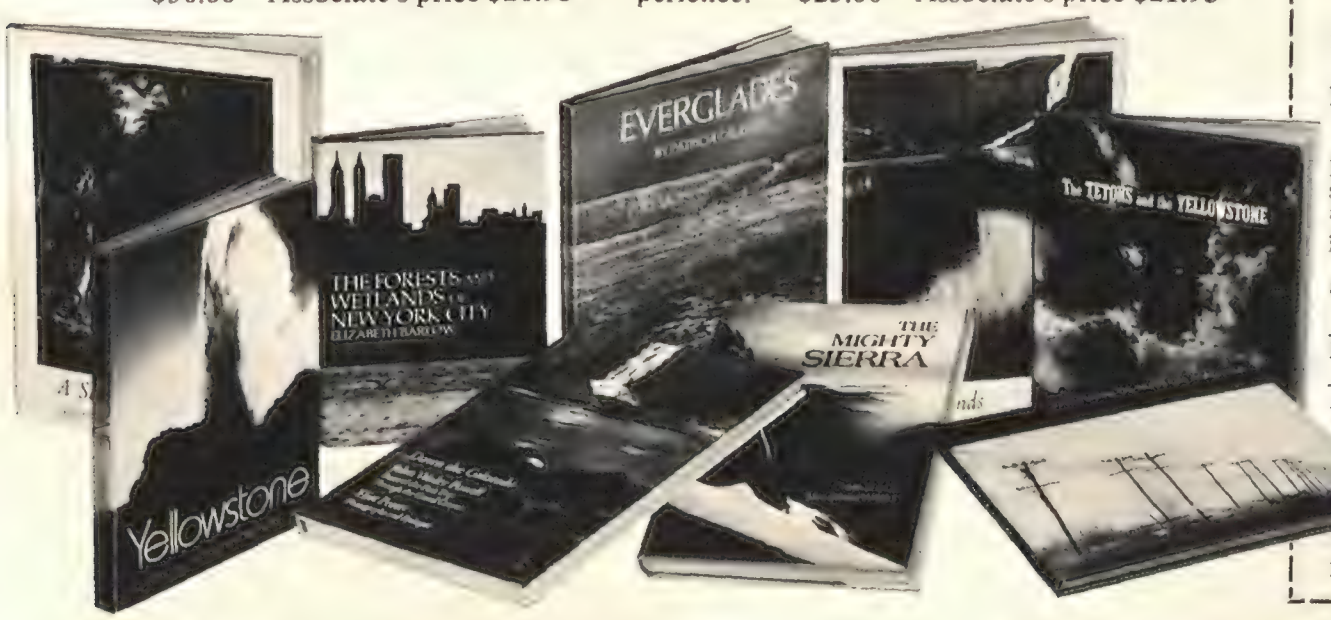

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tlefield. Mr. Baker says for miles around the air was awful—so many men unburied or partially covered, and such numbers of dead horses in the field."

Symbolic of the last gasp of plantation life, before Negro labor had completely disappeared, is Mrs. Mary Jones' letter to a grandchild about her springtime return to one of the plantations: "There are no wicked Yankees here now to torment us as they did last winter, when for one month we were all prisoners in our own home. The doors and windows stand wide open now . . . the cool breezes filled with perfume from the tea-scented olive and the sweet roses and flowers of the garden come freely through the entry."

These letter writers were all imbued with stern moral vision. They were dutiful, well educated, law-abiding, basically kindly. The slave trader, the middleman in the business, was not to their liking. Yet they did accept the buying and selling of other human beings as godly.

Professor Myers' epilogue describes the disintegration and disappearance of the family mansion on one of the Jones plantations. It might also be said to describe the symbolic dissolution of the postwar South: "To the visitor who knows the past it is a heartbreaking spot. In the tangle of forest growth he traces the rough lines of a brick foundation; in mimosa and magnolia and holly, now monstrously overgrown, he sees vestiges of a garden once laid out with affection and taste. A mile distant the plantation gates still stand, mute evidence of a day that is dead; and streamlined trains, chrome-plated in the sunlight, streak past bound for New York. The rest is silence. The North Newport River still glides on, thoughtless that a way of life has vanished from the earth."

—*Angèle de T. Gingras*
Washington book and drama critic.

Brownout and Slow-Down
Richard Saltonstall jr. and
James K. Page jr.
(Walker, $5.95)

Most environmental problems are highly vexing, but some are more vexing than others. For example, how shall we satisfy the nation's unmitigated appetite for energy without ravaging the environment? And how shall the nation's cities cure their affliction with the automobile, developing instead a comprehensive transportation system?

The authors of *Brownout and Slow-Down* devote half of their book to each of these "twin crises" of energy and transportation. Happily, they have somehow managed to avoid being either self-righteous, doctrinaire or disputatious—characteristics common to both sides in most environmental debates.

The authors' sympathies are not exactly in doubt. (The book is dedicated, after all, "To whomever it was who made the first windmill, and to Baron Karl von Drais, inventor in 1816 of the bicycle.") But theirs is a refreshingly balanced appraisal of two quandaries. Because it is cogent and stripped of unnecessary reproach, it confronts the reader directly and forcefully with the problems, and with the choices and trade-offs at stake.

Many of the energy issues are graphically depicted in an absorbing account of the troubles which have beset Consolidated Edison Company of New York. This story is told, say the authors, because it "illustrates the depth, complexity and near hopelessness of the dilemma facing both utilities and the electricity-hungry public." The same could be said of the whole energy section of the book.

The authors state, gloomily: "The technological innovations we have always counted upon to bail us out are not, in this case, immediately forthcoming. Our best men are whipsawed and nearing exhaustion; our political, economic and scientific institutions have proven unequal to the task. The energy crisis casts a darkening shadow on all of us and on the future of all our institutions."

But the book does not leave it at that. It offers constructive suggestions—a ban on electricity-consuming signs; a progressive tax on large users of energy; restrictions on heating and air conditioning ("Certainly many buildings are far too warm in winter and far too cold in summer."). Similarly, the book also offers warnings. It would be "unfortunate," for example, "if the nation became so committed to nukes [nuclear plants] that it was practically and politically impossible to turn, in the next few decades, to another mode of power such as solar energy."

"In the end," say the authors with typical pragmatism, "what it all boils down to is that we must buy as much time as we can through a concerted energy conservation movement while in-

creasing enormously public and private expenditures to try to work a way out of the impasse."

The section on transportation is less cohesive. But it, too, covers the important ground—the public's attachment to the automobile, health and social problems, development of cleaner cars, revolt against highways, pros and cons of other modes of travel, broader aspects of transportation planning. Here too is brisk, incisive writing with sensible perspectives and suggestions: "It would be misguided and even tragic if our search for a new car overlooked the dire need to reduce the number of automobiles—even if they are clean—driven by anyone in the United States who can pass a driving test. The automobiles that surely will be developed must fit into a national transportation plan which will set guidelines for getting about within the city, between cities, between cities and suburbs and over the long stretches of sparsely developed country."

—Rice Odell

Author, "Activist Conservationists," in April 1972 SMITHSONIAN

No Name in the Street
James Baldwin
(Dial Press, $5.95)

When he was not putting out fiction or drama during the last 20 years, James Baldwin seems to have been writing essays that read like sections of a long autobiographical novel. *Notes of a Native Son, Nobody Knows My Name* and *The Fire Next Time* are the first three sections. His new book, *No Name in the Street* is the fourth. In these works he has made of himself that character in a novel who takes us into a universe both new and strange where even familiar things may be seen in the light of someone else's joy or terror.

What has given this universe life has been Baldwin's earnest struggle to understand the forces that shaped him. What is least satisfying about the latest installment is its refusal to deal ruthlessly with the recent forces that have made our main character who he is today.

Through Baldwin we meet a few celebrities, a few Black Panthers and Huey Newton, but at crucial times we keep losing sight of Baldwin himself. Once he would have probed deep into any experience he bothered to relate, would have given his reaction to any name he chanced to drop. His anger would have illuminated everything.

It is not that the frequency of real insight is lower. Just as often we find ourselves looking up from the pages saying, Yes: "The powerless, by definition, can never be 'racist,' for they can never make the world pay for what they feel or fear except by the suicidal endeavor which makes them fanatics or revolutionaries." ". . . If a poor man in trouble with the law receives justice, one can suppose heavenly intervention." ". . . White Americans are probably the sickest and certainly the most dangerous people, of any color, to be found in the world today."

Yet Baldwin seems to be holding back much of the real texture of his life, perhaps out of fear that his recent exile, his life in general, will not connect so well with the kind of struggle symbolized by people like George and Jonathan Jackson. But it can. We need him to tell what life among the international big fish has taught him about human exploitation. Until he fries these fish his insights will hang ever more isolated in what, despite all, remains among the best prose of any living writer.

—George Davis

Black author of recent novel, *Coming Home*

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Study tours are designed as educational travel for members of the Smithsonian Associates. Smithsonian staff or other experts accompany all tours.

Foreign Study Tours

For information: Miss Bliss Schumann, Room 123 SI, Smithsonian Institution, Washington, D.C. 20560.

"No Tour" Tour: Dulles International Airport to London and return—September 11-October 2.

The Pilgrimage Road: The route of medieval pilgrims from Paris through Burgundy and Bordeaux to the shrine of Santiago de Compostela in northern Spain —September 11-October 9.

Russian Museum Tour: September 12-October 3. (waiting list only)

Pakistan and Afghanistan: October 9-November 8. (waiting list only)

Peru: Archaeological sites, folklore and anthropology (depart and return Miami)—February 8-March 5, 1973.

Morocco: Atlas Mountains, archaeological sites—March 6-27, 1973.

Cave Paintings: A tour of prehistoric caves of Spain and France—April 2-26, 1973.

Middle East: A trip through Syria, Jordan, Lebanon and Cyprus to see classical sites, crusader castles, Arab cultures (depart and return London)—April 13-May 4, 1973.

Sites of Civilization: Three weeks on the cruise ship *Argonaut* from Athens to Rome, via Thera, Crete, Egypt, Carthage, Malta and Sicily (depart and return New York)—starting October 6, 1973.

African Safari: Tanzania and Kenya game parks, plus the Seychelles in the Indian Ocean—three weeks beginning late October, 1973.

Domestic Study Tours

For information: Mrs. Patricia Kilkenny, Room 118 SI, Smithsonian Institution, Washington, D.C. 20560.

Archaeology Dig: Join in excavating New Hampshire Indian site—July 30-August 5.

Mountain Camping: Camping, hiking and climbing with ecological studies in Washington's Mount Adams wilderness—August 21-31.

Olympic National Park: Explore the botanic progression of the rain forest and the geology of the park—September 16-22.

Instruction in Photography: Field experience in Maine including landscape, mills, old farms and coastal areas—September 24-29.

Arizona Astronomy Weekend: Introduction to the Smithsonian's Mt. Hopkins Observatory and other research facilities in Tucson area—October 6-9.

Blockade-Runners' View of the Carolinas: Coastal traverse, including visits to a shipwreck and maritime collections—October 21-27.

Sanibel Island, Florida: Exploration of a Gulf Coast barrier island and the wildlife refuge—November 5-10.

Nature's Past: Florida's West Coast from Sanibel Island to flood-plain valley of Myakka River through jungle and cypress swamp—November 12-19.

Smithsonian highlights

Summer hours now in effect at the Smithsonian are: 10 A.M. to 9 P.M. for A&I, MNH and MHT. Hours for the other buildings remain the usual 10 A.M. to 5:30 P.M.

Arts and Industries
"Space Art by Chesley Bonestell" includes 56 paintings by the dean of astronomical and space art.

"Drugs" is a general perspective of all aspects of drugs in our society. For information on daily activities including films, lectures, panel discussions and theaters, Dial-a-Museum: 737-8811.

Freer Gallery of Art
"Recent Japanese Accessions" is a special exhibit in honor of the Japanese-American Citizens League.

Division of Performing Arts
"Festival of American Folklife 1972" (see June SMITHSONIAN) is being held on the Mall from June 30 through July 4. Featured this year are the state of Maryland, Indian participants representing tribes from New Mexico and Arizona, and the American working man as a member of organized labor. Continuous craft demonstrations, workshops and Indian panel discussions in all three areas will be held from 11 A.M. to 5 P.M. with informal concerts scheduled into the early evening.

"Tom Sawyer," returned to the Smithsonian puppet theater by popular demand, runs through July 9 followed by "Land of Oz." Performances are at 11:00, 12:00 and 1:00 daily, Wednesday through Sunday. Call (202) 381-5395.

Museum of History and Technology
"Sculpture in Light and Motion" by Adam Peiperl is art in physics featured in the Physical Sciences Lounge.

Graphic Arts Hall with demonstration shops, period rooms with printing presses and exhibits of printmaking techniques has now opened.

Numismatics Hall has reopened its display of the national coin collection and the Lilly gold coins (see SMITHSONIAN, December 1970).

"Why Teeth" features Billy Bad Tooth and Molly Molar in a slide show with drawings and sculpture showing why we have teeth.

Mutascopes, one with a Plexiglas side to reveal its inner workings, go on display in mid-July showing early Edison newsreels and naughty (c. 1905) flip-card shows.

Museum of Natural History
"Botanical Sculptures in Gold, Silver and Minerals" features sculptures composed of lost wax castings in precious metals with minerals and gems.

"Insect Zoo" contains a wide variety of living insects (including a termite colony, beehive, ant mound) and uses audio-visual aids to show some of the remarkable biological features of common and rare insects. All aspects of an insect's life history will be illustrated when possible, such as mimicry and metamorphosis.

National Collection of Fine Arts
"The Monotype: An Addition of One" includes 39 monotypes, prints typically made by pressing paper over a wet color design on plate glass, providing a single reproduction, by four American artists.

"Artist-Naturalists: Observations in the Americas" opens July 14 with prints, drawings and watercolors by Audubon, Mark Catsby and other artist-naturalists.

"National Community Arts Competition" includes original work and photographs representing the winners of HUD's competition for new ideas in environmental decoration. Opens July 22.

Renwick Gallery
"The Swedish Touch," contemporary Swedish textiles, displays 35 works by 22 artists including tapestries, wall hangings, patchwork, fabric collage, stitchery.

Smithsonian Commons
Luncheon facilities for members of the Smithsonian Associates are located in the original Smithsonian Building. Open weekdays from 11:30 A.M. to 2:00 P.M., the Commons offers a buffet luncheon from $1.40 to $1.85 upon presentation of a membership card.

National members of Smithsonian Associates gather at a reception to meet Secretary Ripley during the first "Weekend at the Smithsonian."

National Portrait Gallery
"If Elected . . ." features portraits and campaign memorabilia of men and women who ran for the Presidency and lost and includes audio tapes of speeches by such also-rans as William Jennings Bryan (see June SMITHSONIAN).

Traveling Exhibition Service
There are up to 70 different Smithsonian-sponsored exhibitions on display each month throughout the United States and Canada. For a complete listing and information on how to bring an exhibit to your area write: Traveling Exhibition Service, Smithsonian Institution, Washington, D.C. 20560.

- Storrs, Connecticut—"Contemporary Chinese Brushwork" (Jorgensen Auditorium, University of Conn., July 1-30).
- Memphis, Tennessee—"William H. Johnson" (Brooks Memorial Art Gallery, July 8-August 6).
- Newark, Delaware—"Prints and Drawings by Lovis Corinth" (University of Delaware, July 15-August 13).
- Raleigh, North Carolina—"Cross-Section of Contemporary Graphics" (N.C. State University, July 15-August 13).
- Elmira, N.Y.—"Vision of Peace in Paintings" (Arnot Art Museum, July 1-30).
- Jamestown, New York—"Shout in Silence" (James Prendergast Library Association, July 15-August 13).
- Ft. Collins, Colorado—"Indian Images I" (Colorado State University, July 17-August 15).

Working Tours for Associates

Smithsonian Associates (with Educational Expeditions Inc.) makes available a chance to join distinguished scientists on working research expeditions. No special qualifications are necessary. Costs range from $400 to $1,500. For information: Mrs. Patricia Kilkenny, Expeditions, Smithsonian Associates, Smithsonian Institution, Washington, D.C. 20560.
Anthropology: Okavango, Botswana—Mr. Thomas Larson—August 6-26.
Volcanology: Nyragongo, Zaire—Dr. Haroun Tazieff—August 1-21.
Marine Archaeology: Bermuda—Cdr. Mendel Peterson—August 1-21.
Marine Archaeology: Gythion, Greece—Dr. Niki Scoufopoulos—August 8-29.
Archaeology: Meroë, Sudan—Dr. Peter Shinnie—December 15-January 4, 1973.
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By Patrick Ryan

Relax, you deep thinkers– back to bed!

Fellow sloths, convinced that the principal malaise of the United States is too much dashing about by too many people, will share a feeling that too few trumpets have been sounded for McDonald's hamburger chain in Oak Brook, Illinois. At their new headquarters, the top brass of this beef-and-onion empire have installed a 700-gallon water bed, shaped like a hamburger, as a central feature of their think-tank relaxation room. Such recognition—that the exercise of wisdom is not necessarily accompanied by St. Vitus' dance—rates the applause of all addicts of horizontal meditation.

We are warmed by the knowledge that even the producers of an energy-packed comestible accept the theory, as stated by W. S. Gilbert, that "Quiet, calm deliberation/Disentangles every knot." And if it doesn't, when recumbent on a water bed, there is always the pleasant prospect that Morpheus may restoratively take over.

For longer than any supporting evidence can justify, our social worthiness has been equated with busy bees, get-up-and-go, idle hands being the Devil's tools and other frantic slogans. In other animal species such restlessness indicates irrationality. And it is obvious that more mayhem has been visited on this planet by the overactive than by the lethargic.

A deathless Puritan canard conditions the public to regard lying long in bed as sinful, and to acclaim getting out of it at sparrow-crack as virtuous. Whereas, in historical fact, such eminent contributors to our advancement as Cicero, Voltaire and Mark Twain frequently preferred to work in bed. Doctor Johnson, though telling all young men with great sincerity, that "nobody who does not rise early will ever do any good," proclaimed simultaneously that, speaking personally, all his life long he had lain till noon.

Winston Churchill, while commending us to blood, toil, tears and sweat, customarily spent the thick end of the morning propped up in bed, brilliantly berobed, dictating to relays of secretaries, telephoning and calling in underlings for sudden briefings. Thomas Hobbes, while lending support to busy human progress, found tranquillity of body by staying in bed to work out mathematical problems, scribbling on the sheets and, when the linen ran out, continuing his calculations on his own thighs.

Notwithstanding such examples of creative sluggards, Western society has long been hooked on the proverb, "Early to bed and early to rise, makes a man healthy, wealthy and wise." Even in the 17th century, this thin-lipped maxim only held true for ambitious peasants who kept cows and intellectuals who couldn't afford the price of late-night candles. Habitual early risers, in actuality, are at best fidgety people who make a virtue out of insomnia. At worst, they may well be secret villains who can't sleep for guilt or ultimate egotists who feel that the world can't possibly start until they get up and set it off. James Thurber, privy to so many sad truths, became an amender of maxims and summed up: "Early to rise and early to bed makes a male healthy and wealthy and dead."

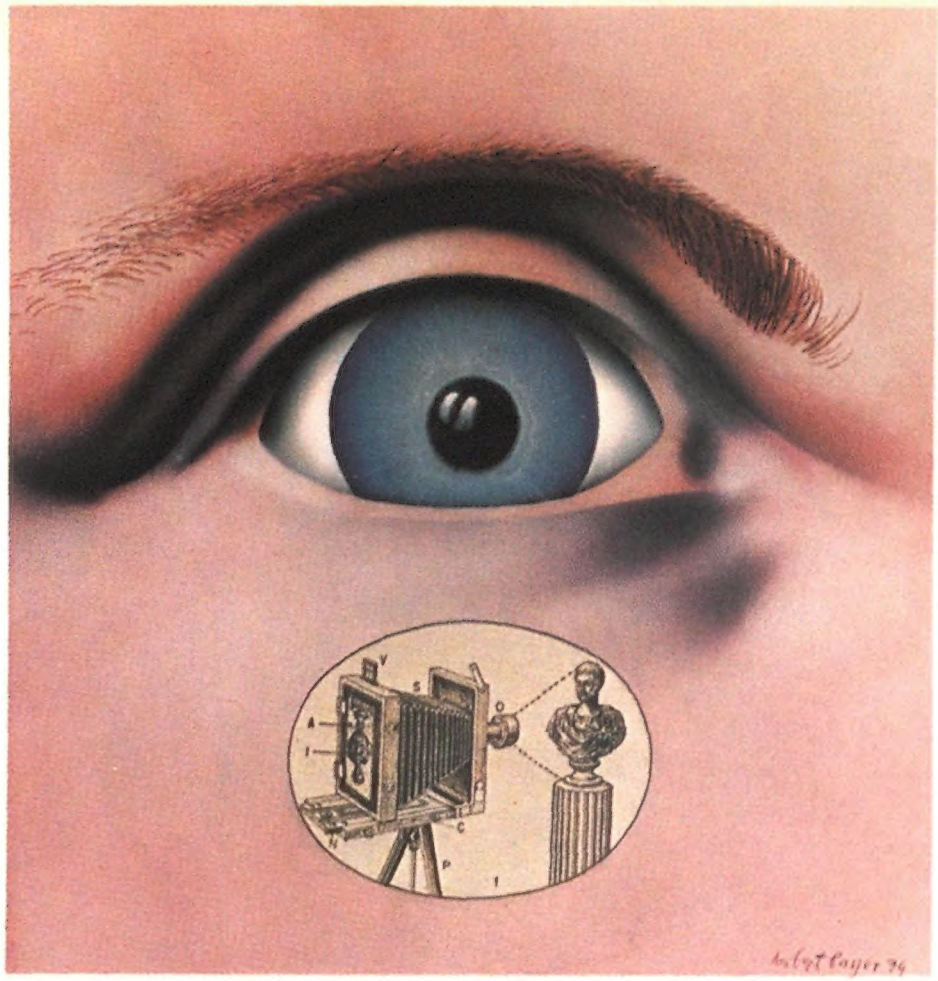
It might turn out a blessing if more of our pundits gave up competing with larks and lay abed a bit longer. Rarely do they come up with prospects of anything brighter than creeping doom, population explosions, computer tyranny and insecticide suicide.

If all our most influential think tanks were patterned after Old McDonald's in Oak Brook and provided their inhabitants with individual hamburger-shaped water beds, the sages would drift off to innocent sleep and trouble us no more with prophecies of our imminent extinction. Whereupon life beyond the mattress might seem worth some Spartan matutinal endeavor.

Having reached this conclusion, I might yet this day get out of bed before noon.

The ideal

We must teach our children not only what to see but *how* to see.



artist: herbert bayer (1934)

The real

Too often we try to educate by preaching orthodoxies. But orthodox solutions are no longer enough.

Our world is changing faster than ever before while many of our educational premises remain static, mired in the past.

But the past no longer has enough of the answers. In the years ahead, problems will arise for which there are no precedents. To keep the future open we must teach our children not only what to learn but *how* to learn, *how* to see, *how* to analyze.

Only then will they be able to recognize and cope with problems which our generation cannot even foresee.

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artist: jasper johns

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